THE

AMERICAN JOURNAL OF PHARMACY.

MAY, 1860.

ANALYSIS OF COMMERCIAL GLACIAL PHOSPHORIC ACID.

By John M. Maisch.

Within a few years past, phosphoric acid and its compounds have attracted the attention of medical practitioners, and are now extensively used, frequently in the form of solutions and syrups, in which free phosphoric acid is employed for keeping the earthy and metallic phosphates in solution. In many of the formulas of these preparations, the glacial phosphoric acid, as it occurs in commerce, is assumed to be the monohydrated HO, PO_5; but those who have made them will have frequently noticed that sometimes the phosporic acid employed is unable to dissolve the same quantity of phosphates which at other times is taken up by it. As a reason for this, we generally assign the presence of variable proportions of fixed earthy matters, which cannot be volatilized by the fusion of the acid; and it is a fact that almost all of it, the way we meet with it in commerce, yields a white precipitate on being oversaturated with ammonia.

At the suggestion of Professor Procter, I have taken up the subject with the view of ascertaining the nature and the amount of these impurities, and the state in which the acid exists ordinarily.

In the first place my inquiries were directed to obtain glacial phosphoric acid from different manufacturers; in this I was unsuccessful. By inquiring of a number of friends, I ascertained that they are all using an article made by Merck, of Darmstadt, a number of whose chemicals enjoy a well merited reputation among us. This induced me to select at random from a larger lot of this acid, three specimens, which were washed with cold water, and dried by means of bibulous paper.

On neutralizing an aqueous solution of glacial phosphoric acid, to effect which the generation of heat has been carefully avoided by placing the dish in cold water, ammonia will sometimes throw down no, or only a slight, precipitate, which is increased by the subsequent application of heat. The precipitates thus collected and heated amounted to 8.18, 4.16, 0.80 per cent., and in a fourth instance no precipitate at all was obtained. In the first case I had collected from 550 grs. of acid 45 grs. of precipitate, and intended to use this for a quantitative analysis; but meeting with an accidental loss of a portion of it, I am only able to give the quality of these impurities.

The precipitate was dissolved in diluted muriatic acid, and the solution filtered; a residue of silicic acid remained on the filter amounting to 1.5 grs. = 0.273 per cent. of the phosphoric acid, or 3.333 per cent. of the weight of the precipitate. The filtrate was mixed with strong alcohol, and sulphuric acid dropped in as long as a precipitate was produced, which was separated by a filter and well washed with alcohol. The acid filtrate, from which the alcohol had been evaporated, yielded a granular white precipitate on being oversaturated with ammonia, which was insoluble in chloride of ammonium; carbonate of potassa produced no change in the cold, but, on boiling, a white precipitate, which was soluble in acetic acid, and this solution was not precipitated by oxalic acid, but yielded a white granular precipitate on the addition of chloride of ammonium, ammonia and phosphate of ammonia in succession. The filtrate, therefore, contained phosphate of magnesia.

The residue on the filter was wholly soluble in a large quantity of water, and this solution was affected by reagents in the following manner: Phosphate of soda, turbid; after a while, white precipitate; oxalate of ammonia, immediately a white precipitate insoluble in acetic acid; ammonia, ferro- and ferridcyanide of potassium did not disturb it. These reactions prove the presence of lime, and the absence of alumina, and of iron, and other heavy metals.

The whole precipitate was therefore composed of silicic acid, phosphate of lime and phosphate of magnesia. I must mention here that a portion of the same crystals was tested with chloride of barium and caustic potassa, but neither sulphuric acid nor ammonia was found in any of the specimens examined.

When the glacial phosphoric acid, dissolved in cold water, is immediately oversaturated with ammonia, filtered from the precipitate, and mixed with a solution of chloride of ammonium and magnesium, a precipitate of ammonio-phosphate of magnesia occurs only of that portion of the phosphoric acid which has, by the action of a moist atmosphere and the consequent gradual absorption of water, been converted into the terhydrate or the common phosphoric acid; an excess of the double chloride produces in the filtrate no further precipitate, until it is heated to boiling. By setting the solution aside, the meta- or pyrophosphoric acid is gradually converted into the common tribasic acid, but this change is effected in a short time on the application of heat. To determine whether all the acid has been changed in this manner, it will suffice to add more of the double chloride to the ammoniacal solution and boil again; this must be continued until a precipitate ceases to be separated.

But inasmuch as meta and pyrophosphate of lime and magnesia are kept in solution by the corresponding phosphate of ammonia, it will be necessary to boil the original solution of the acid for some time, allow it to cool and supersaturate it with ammonia. The filtrate must then be repeatedly boiled, and some ammonia must be added to the cooled liquor until no further precipitate occurs. We may then be sure that all the earthy phosphates have been separated. The combined precipitates are now exposed to heat until they cease to lose weight; their weight is then deducted from the original weight of the phosphoric acid, and the remainder may be looked upon as the weight of pure hydrated phosphoric acid, provided that in the beginning we have satisfied ourselves of the absence of sulphuric acid and ammonia. Though many works on chemistry recommend to test for nitric and hydrochloric acids, I have never, either on any former or the present occasion found either of these two; but sulphuric acid, I have in one or two cases met with, not however in Merck's.

The ammoniacal solution of phosphoric acid is then precipitated with a solution of chloride of ammonium and magnesium, and after standing for several hours, filtered. The precipitate is washed with a diluted solution of ammonia, until the washings, when oversaturated with pure nitric acid, produce no precipitate in nitrate of silver.

To determine from the precipitate the quantity of anhydrous phosphoric acid, I have followed two ways; if its quantity was large, I have dried it upon a brick tile at ordinary temperature, ascertained its precise weight, ignited a convenient portion of it, and then calculated the weight which would have resulted from the ignition of the whole. If the quantity of the precipitate was small, the whole of it was ignited together with the filter, the amount of ashes of which was ascertained by incinerating a portion of the same sheet of paper, and deducting the weight of ashes from the whole weight obtained. The result in either case is pyrophospate of magnesia $2MgO, PO_5$, which contains 63.33 per cent. of PO_5.

The following table contains in the first column the amount of phosphoric acid employed; in the second, the weight of impurities; third, the percentage of the same; fourth, the weight of $2MgO$, pPO_5; fifth, the weight of PO_5; sixth, its percentage of the pure hydrate; and in the seventhcolumn the percentage of the free PO_5 in the specimen.

I.	II.	III.	IV.	V.		VI.	VII.
550 grs.	45.0 grs.	8.1818	609.86 grs.	386.12	grs.	76·46	70.20
100.75 "	0·8. "	·794	122.77 "	77.75	"	77.79	77.19
48.20 "	none	——	63.22 "	40.04	"	83.48	83.48
——	——	4.16	——	——		——	——

Pure metaphosphoric acid HO, PO_5 contains 88.806 per ct. PO_5, and the best specimen which I have examined contains 5.32 per ct. less, while between the highest and lowest there is a difference of 13.28 per ct. in the available acid, and after the deduction of the earthy phosphates the difference is still 7.02 per ct. It cannot be doubted that the large amount of impurities found in the first specimen is accidental, and probably derived from the vessel in which the phosphoric acid was fused; the purity of the other two specimens taken out of the same jar, speak in favor of this supposition, and it appears to me, on account of this great difference, as if most likely different portions of the acid, fused at the same time in one vessel, may contain a variable proportion of impurities.

From the amount of water alone no conclusion can be arrived at as to the proportion of the three phosphoric acids present at the same time. To ascertain this, an acid, known beforehand not to contain any impurities, after its solution in cold water and over-

saturation with ammonia, may be precipitated with chloride of ammonium and magnesium; this precipitate will contain all the common phosphoric acid. The acid of the filtrate is then to be converted into the ordinary variety, and precipitated as before; this precipitate will now contain all the meta and pyrophosphoric acids, the amount of each of which can be easily calculated from the remaining weight after the deduction of the terhydrate.

Philadelphia, March, 1860.

ON THE RESINOUS EXUDATION OF LIQUIDAMBER STYRACIFLUA.

By William Pryor Creecy, of Mississippi.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

The attention which this resinous product, and the interesting tree from which it is derived, has already received from pharmacologists, has induced me to make it the subject of the investigations which follow, with a special view to ascertain the nature of the volatile acid or acids which give it a claim to be classed among Balsams.

The investigations of M. Bonastre, and of Wm. Hodgson, Jr., as quoted by Dr. Wood in the U. S. Dispensatory, attribute to this drug benzoic acid, as a constituent, and according to the last named chemist, it is in the proportion of 4.2 per cent.; several other constituents are also noted. The experiments of Mr. Daniel Hanbury, however, tend to show the absence of benzoic acid and the existence of cinnamic acid in this balsam, and all the others derived from this genus.

The specimen examined was from the State of Mississippi, where the "Sweet Gum" tree grows to the height of near 100 feet, and abounds in its peculiar resinous ingredient. When the trees are "belted," preparatory to being felled in clearing the land, the balsam exudes very abundantly, and thickens to a semifluid consistence; the outside of the masses becoming dry and hard.

The color of the liquidamber juice when fresh and pure is a transparent yellow, resembling that of balsam of fir. But as it thickens it becomes opaque and white, gradually changing to a dirty brown, interspersed with tears of a pure white color. Its

odor is characteristic, resembling styrax, which in fact it much resembles in all its sensible properties. Of the numerous experiments made upon this balsam, the following are selected as the most important:

First.—One thousand grains of the balsam were boiled in water with an equal weight of hydrate of lime, for some hours, the decoction filtered while hot; on cooling, a crystalline product separated, which was collected on a filter and washed; its weight when dried was thirty-one grains.

Redissolved the mass in hot water and treated with muriatic acid in slight excess, a scaly crystalline white precipitate was separated on cooling, collected on a filter and dried. The precise weight of this was fifteen grains.

Testings.—On heating a small portion of the product with a solution of chlorinated lime, the characteristic odor of essential oil of bitter almonds was evolved. Heating with a mixture of bichromate of potassa and sulphuric acid caused the same odor of oil of bitter almonds to be more strongly developed.

A small portion of the product when moistened on a piece of litmus paper gave an acid reaction.

It is almost insoluble in cold water. Soluble in about 24 parts of boiling water, and soluble in alcohol and in ether.

Second.—Subjected two ounces of the balsam to three successive distillations in water, saturating the solution with chloride of sodium three times and distilling two-thirds of the mixture each time. The last distillate had the agreeable and fragrant odor, characteristic of the balsam; this was shaken up thoroughly with ether, the ethereal solution separated, and on evaporation yielded globules of an oily nature, possessing a very aromatic odor, and sharp pungent taste.

Testings.—A drop upon bibulous paper was evaporated by the heat of an alcohol flame, leaving no stain, but retaining the odor persistently.

The product is soluble in water, in alcohol and in ether, and gives a slight acid reaction with litmus.

Third.—To two ounces, troy, of the balsam digested in a pint of alcohol and filtered, muriatic acid was added until it ceased to yield a precipitate of resin. This resin, which collected in a soft mass, was removed, washed by kneading with

cold water till it was free from acid, and assumed a light buff color; it possessed a very slight odor, reminding of the balsam, and weighed five and one-half drachms. The clear acid liquid, from which the resin was separated, being transferred to a retort, was distilled with the constant addition of water till nearly all the alcohol was distilled over. The distillate contained a deposit of a semi-concrete substance soluble in ether. This distillate was treated with caustic potash until decomposed, heated to the boiling point, filtered and supersaturated with muriatic acid. On cooling, a crystalline product separated, of a reddish hue and very little odor.

The residue removed from the retort was filtered while hot; on cooling it deposited a small amount of a reddish crystalline powder, resembling that obtained from the distillate.

Testings.—This red powder was soluble in hot water, in alcohol, and in ether. On the addition of solution of chlorinated lime and heating, no bitter almond odor was evolved.

Bi chromate of potassa and sulphuric acid heated with a portion of the powder gave no bitter almond odor.

Fourth.—Subjected half an ounce of the balsam to sublimation, but, owing to the use of an imperfect apparatus, was only successful in obtaining a few grains of the sublimed acid. This acid was in white crystalline needles, much like benzoic acid, and gave no odor of bitter almonds with the chlorinated lime.

Summary.—From these experiments the inference may be drawn that although the predominant acid contained in Liquidamber Styraciflua is undoubtedly cinnamic acid, yet it is probably associated with a small proportion of benzoic acid.

It appears also to contain a volatile odorous principle, with an acid reaction, soluble in water, alcohol and ether, and a hard resin in the proportion of about 30 per cent.

Philadelphia, December, 1859.

NOTE ON COWRIE RESIN.

By E. Donnelly, M. D.

Cowdie, Kaurie, Cowrie, Kauri, or Australian Dammar Resin.

This resin is the product of *Dammara Australis* of some authors, and of the *Agathis Australis* of others; it is familiarly

called Kourie tree by the colonists of New Zealand, and is one of the noblest trees of the Pinaceæ order, often attaining a height of over two hundred feet, with a trunk free from knots, light, compact, durable and admirably suited for making the best masts for ships of any tree in the world. This tree, owing to its great height, is generally selected by the Australian honey-bee,—a small stingless insect, not as large as our common house-fly—to form its honey-nest, thinking to be here secure from the lynx-eyed native, who is always on the look-out for the mellifluous treasure, which to him is an article of considerable importance, both as food and to make his favorite intoxicating drink called Bull. But the most singular part of this honey business, is, that the negro remains below, and sends his *gin* to procure the coveted prize, and she with the most astonishing dexterity and courage ascends to the dizzy height of over two hundred feet, secures the honey-nest, places it in a calabash suspended from her neck, descends with the fruit of her labor, and lays it at the feet of her sable lord. Cowrie is obtained by making incisions in the trunk of the tree, which exudes the resin in a liquid form in considerable quantities; it is allowed to harden, and then collected in bags for exportation. The natives use it as a masticatory when they cannot procure their favorite one, called by them "mimi-ha" or kowrie tauhiti. Kowrie, in the language of the natives, means the resin of the kowrie pine, and "tauhiti" at a distance or from a distant part. The kauri tauhiti is perfectly black, brittle, with a shining fracture, and a somewhat aromatic bituminous odor, it becomes soft with the heat of the mouth, burns with a clear flame, and waxy odor. It is found in masses on the beach near North Cape, and is a species of bitumen, thrown up no doubt, by a subterranean force, similar to what takes place on the coast of Terre Firma at Cumana. Kowrie resin, as found in commerce, is in pieces of various sizes and color, the latter varying from a light yellow in the best varieties, to a dark brown in inferior sorts. "The specific gravity of the light colored variety is 1.040, that of the dark 1.062. Fusing point 255°; when burned it leaves .424 of an ash containing lime and sulph. acid. A portion of it (57.33 per cent.) is dissolved in alcohol with acid properties, dammaric acid $C_{40} H_{30} O_7, HO$. A portion remains undissolved, dammarane

$C_{40} H_{31} O_6$. By distillation an amber-colored oil, dammarol, is obtained $= C_{40} H_{28} O_3$, or the resin deprived of 3 atoms of water. Distilled with lime it yields dammarone $C_{38} H_{30} O$, by the removal of 2 atoms of carbonic acid, and 1 atom of water."—(*R. H. Thompson.*) The only use to which kowrie resin has been applied is that of making varnish, and it would appear that it is only used in this country for that purpose, as every author I have consulted (who speaks of kowrie) makes mention of the Americans using it extensively as a varnish. I have been told by persons in the varnish trade, that nearly all of that article which comes from New York to the Philadelphia market, is made from kowrie resin. As a varnish it is not so durable as that made from copal, and is very difficult to work; but still it makes a very good common varnish, drying quickly, and of a lighter color than the varnishes usually made from resin and other impure substances. Its price varies from 4 to 6 dollars per 100 lbs.

ON PILLS OF IODIDE OF IRON.

By William Procter, Jr.

In the formula at present in the Pharmacopœia, these pills are directed to be made by triturating together iodide of potassium and proto-sulphate of iron until double decomposition ensues, when by aid of sugar and tragacanth a pill mass is formed and divided into pills. The ready decomposition of these pills, thus made, has rendered this recipe nearly obsolete. Henry W. Worthington, in 1843, published a formula in which a solution of the iodide was mixed with tragacanth paste and honey and evaporated to the pilular consistence. His pill mass, owing to its elasticity, was quite difficult to divide into pills, and when made they easily lost their spherical shape. Within a few years past the pills of M. Blancard of Paris, owing to the perfection of their preservation, have come much into use, but it is certainly to be regretted that in a preparation so much used as this salt, we should be compelled to send to France to get it made into pills.

After various trials, with the view of improving the method of making these pills, the following recipe has resulted, which, when followed with ordinary care, produces a pill entirely satis-

factory to the physician, as regards the entire absence of *free* iodine, its tastelessness, and its property to keep quite well.

Pilulæ Ferri Iodidi.

Take of Iodine, half an ounce;
Iron filings, two drachms;
Water, ten fluid drachms;
Sugar, in fine powder, an ounce;
Althæa root, in powder, half an ounce;
Gum Arabic, in powder;
Powdered Iron, (iron by hydrogen) each a drachm.

Mix the iodine with a fluid ounce of the water, in a thin glass vial, add the iron filings, and agitate them until the solution, on settling, has a clear green color. Mix the sugar, gum Arabic, and powdered iron in a small porcelain capsule, and filter into it the dense solution of iodide of iron, yet hot, from the reaction, observing to wash the filter with the remainder of the water. Then by means of a moderate heat with constant stirring, evaporate the moisture until, on the addition of the powdered althæa, the mixture acquires the consistence proper for a pill mass, and divide it into three hundred pills, which should be rolled until they are perfectly globular.

To preserve the pills from oxidation dissolve a drachm of hard tolu in a drachm and a half of pure ether, and pour it over the pills contained in a deep porcelain capsule, and by means of a circular motion agitate the pills until they are all coated with tolu; then pour them on to a plate and separate them from each other until the ether evaporates, and they cease to cohere together. They should then be exposed in a paper box, in a dry atmosphere, until the varnish hardens, when they may be put up in bottles, ready for use.

Thus made, pills of iodide of iron are shining, black, globular masses, each pill containing about a grain of iodide of iron, perfectly free from iodine odor, and keep in the air without any tendency to deliquescence. Gum arabic is more suitable than tragacanth for this pill. It gives the necessary cohesiveness, without the elasticity and toughness, which are apt to accompany the use of tragacanth, and which renders the mass difficult to form into pills. If the operator finds, after the addition of the althæa, (which from its gummy nature, gives a peculiar consist-

ence to the mass,) that the mass is too soft, the heat must be carefully continued until a pill when rolled out will retain its shape when cool. The introduction of the powdered iron insures the combination of all the iodine during the evaporation, and is in such excess as to continue its preservative influence after the ingestion of the pill.

The coating of tolu, whilst it does not prevent the action of the gastric fluids in disintegrating the pills, enables them to reach the stomach without offending the palate with the disagreeable metallic taste properly belonging to the salt.

ON COPPER AMALGAM.

By H. Dussance.

New Lebanon, N. Y., February 24th, 1860.

To the Editor of the American Journal of Pharmacy:

I have read in many scientific and medical Journals of the discovery of a new alloy, by Mr. Oersheim, which alloy has plastic properties, and is an amalgam of copper. This alloy is not new, for in 1853 Professor Peligot, in his lectures at the Conservatoire Imper. des Arts et Metiers, at Paris, spoke of it. At that time I was his assistant, and prepared great quantities of it, and analysed it.

This alloy presents the remarkable property of being soft when recently prepared, and after a short time it becomes so hard that it is difficult to break it to analyse it. Dentists used it to fill teeth, but I believe its use was abandoned. On account of its property of being soft at first, its greatest use is for the moulding of medals. The best way to prepare it is the following:

1st. Take sulphate of copper and dissolve it in water acidulated by a few drops of sulphuric acid; put in this bath a sheet of iron perfectly clean; the copper is precipitated in the form of a reddish powder.

2d. Wash that powder quickly with hot water, and after mixing it well in a mortar with a few drops of nitrate of mercury, wash it well again with hot water.

3d. Add mercury to it in a mortar, and mix it well, until it has the form of a paste, that can be worked with the fingers.

4th. Wash well with hot water till the washing liquid is perfectly clear.

5th. Press the alloy in a deer-skin till all the excess of mercury is out, and expose to the air. In less than hour it becomes very hard.

A singular property I must notice, is the action of zinc on this alloy; if the mercury contains a little zinc, the alloy comes very hard, but it breaks in pieces by the least knock.

Here is the analysis of it:

Analysis in the ordinary state.

Copper,	25.75	25.81
Mercury,	74.25	74.19
	100.00	100.00

Density 11.48.

Analysis when soft.

Copper,	25.43
Mercury,	74.57
	100.00

Density, 11.033.

Analysis after it has been soft and hard again.

Copper,	25.48
Mercury,	74.52
	100.00

Density, 11.036.

Such is the composition of this alloy, which is given for a new discovery, and which was described seven or eight years ago, and was called *alloy of the dentists*.

NOTES ON BENZOIC ACID AND SOME BENZOATES.

By John M. Maisch.

Benzoic Acid.—When benzoin is treated for benzoic acid by Mohr's process, it is necessary to gradually increase the heat,

and if the process is continued until vapors cease to rise, the sublimate generally contains a variable quantity of empyreumatic matter, to which it owes its odor, and which likewise imparts color to the product. The acid ought to be free of color, and to obtain it thus a second sublimation is often found necessary. In order to avoid this, it is well to have two paper hoods ready made to fit the subliming vessel, and remove the first before it has been requisite to raise the temperature. At about 300° F. a quantity of benzoic acid may thus be obtained, which is perfectly white, of a high silky lustre, possessing but little of the empyreumatic odor, and when dissolved in an alkali, affording a colorless solution; its appearance and chemical behaviour prove it to be far superior to the article usually met with in commerce.

If the sublimation is now continued, the acid obtained subsequently is found to contain empyreumatic coloring matter, as the process proceeds; it may be freed from it by a second sublimation. This increase of empyreumatic products in the sublimed acid is not owing merely to an increase of the temperature, but principally to the fact, that the bibulous paper stretched over the vessel has become saturated with the same, and is unable to absorb and retain any more at the temperature to which it is exposed. If during the process the paper is replaced by a fresh piece, the acid sublimes as white as before, and with as little odor adhering to it. This empyreumatic aroma is frequently considered essential for the medicinal value of the acid, and such careful treatment of the balsam would therefore be inadmissible when the acid is to be used in medicine. But I believe that the product which has been obtained by a slow sublimation at a low temperature, will, by its beauty and purity, fully repay for the little trouble incidental with its collection.

Benzoate of Soda.—When benzoic acid is almost neutralized with carbonate of soda, a colorless solution results, which, when sufficiently concentrated, yields, on cooling, small thin needles in starlike groups; if somewhat further evaporated, the solution assumes a brownish color, and may remain liquid for a day or two without separating any crystals. If still farther evaporated the crystals form very slowly in the syrupy liquid. They are very long, needle-shaped, and commence to become opaque, while

still in contact with the liquid, together with which they dry to an opaque mass without crystalline structure. When removed from the solution and rapidly pressed between bibulous paper, they preserve only in some measure their original shape. The brown syrupy liquid as obtained by evaporation, dries to the last drop to a white opaque mass. Benzoate of soda is best obtained in crystals, by evaporating its solution, only so far that on cooling it will just commence to crystallize, and to expose it gradually to a lower temperature; the crystals thus formed by cooling to 32°, are to be removed from the thin liquid, and rapidly dried by pressing them between folds of bibulous paper.

Benzoate of Iron.—According to Trommsdorff and Berzelius, the ter-benzoate of iron is formed by dissolving recently precipitated sesqui-oxide of iron in an aqueous solution of benzoic acid; the yellow needles are decomposed by water and alcohol, leaving a basic salt behind.

When a concentrated solution of benzoate of soda is added to the officinal solution of ter-nitrate of iron, a voluminous orange colored precipitate is obtained, which is immediately thrown on a filter; when the liquid has nearly all passed, a small portion of water is added to displace most of the ferric solution, and the precipitate is then allowed to dry, spread out upon a brick tile. This was used for analysis.

Five grs. were heated in a porcelain crucible; a little water was first given off, then benzoic acid sublimed in small white crystals; on increasing the heat, a brown liquid collected on the cover, which congealed into brown colored scales having the empyreumatic odor and taste of benzoic acid; the residue was repeatedly moistened with nitric acid, and exposed to heat until vapors ceased to be given off; it then weighed 0.85 grs. which is equal to 17 per cent.

Ten grs. of the benzoate of iron was repeatedly treated with a large excess of ammonia, the sesqui-oxide of iron was well washed upon a filter, then washed into a tared capsule, and heated until it ceased to lose weight; its weight was 1.6 grs. =16 per cent.

Into a glass tube weighing 48.1 grs., 3.08 grs. benzoate of iron, were introduced, and exposed to the heat of a water bath for half an hour; the loss was only about 0.02; the tube was now

introduced into a sand bath of 260°, and kept at this temperature until aqueous vapors ceased to be condensed in the upper part, it now weighed 50.85 grs.; the loss therefore amounted to 51.18—50.85, =0.33 grs. or 10.71 per cent.

From these data, the following formula is calculated for this ter-benzoate of iron.

Fe_2O_3	80	16.91	16.50
$3C_{14}H_5O_3$	339	71.67	71.44 (see below.)
6 HO	54	11.42	10.71
$Fe_2O_3,3C_{14}H_5O_3+6HO$	473	100.00	

Ter-benzoate of iron, as thus obtained, is in a light powder, of a beautiful orange color, permanent in the air, turning brown between 270 and 280°; it fuses and yields when carefully heated, at first pure benzoic acid, afterwards an empyreumatic liquid of an acid reaction, which appears to be principally the same acid, and congeals in scales. Water and alcohol dissolve a portion of it, probably an acid salt, and leave a basic salt behind.

Benzoic acid is scarcely used in medicine, except in paregoric and occasionally in ointments; when taken internally, it is stated to act as a stimulant. Combined with iron as in the above salt, it might perhaps prove useful in the hands of the physician. The salt has very little taste, not at all ferruginous, and would certainly be preferable to the acid, or the alkaline salts which possess a marked acrimony.

When the above ter-benzoate is desired, the directions above given for its preparation should be closely followed; the filtrate from the precipitate separates in the course of two days, another precipitate, which dries upon the filter in a yellowish powder, and in orange brown scales, evidently a mixture of different compounds; and after three weeks, more of the light powder is deposited. The drying is to be accomplished in thin layers upon a brick tile.

Bibenzoate of Ammonia.—In order to determine as near as possible the quantity of benzoic acid in the iron salt, the above filtrate from the treatment of the ferric benzoate with ammonia was evaporated, and kept at a temperature of below 190° F., until a dry mass remained behind and the loss of weight ceased. The

residue weighed 8.25 grs., it evolved ammonia when treated with an excess of caustic potassa; and Wackenroder's observation, which has been doubted already by Liebig, that on the spontaneous evaporation of a solution of benzoic acid in carbonate of ammonia, pure benzoic acid is separated in crystals, is thereby proven to be incorrect. Assuming the experiments of Berzelius, that a bibenzoate of ammonia is thus formed, to be correct the above 71.67 per cent. or 7.167 grs. of $C_{14}H_5O_3$, would require of NH_4O 0.824 grs. and of HO 0.285 grs. making the required whole weight of the salt, $7.167+0.824+0.285=8.276$, with which the actual weight of 8.25 closely agreed. Accordingly the formula for anhydrous bibenzoate of ammonia is calculated as follows:

NH_4O	26	9.96
HO	9	3.45
$2C_{14}H_5O_3$	226	86.59
$NH_4O,HO,2C_{14}H_5O_3$	261	100.00

and 8.25 grs. of bibenzoate of ammonia as found above, contain $\frac{8.25\times86.59}{100}=7.143675$ grs. $C_{14}H_5O_3=71.437$ per cent. of the above benzoate of iron.

This experiment verifies on the one hand, the above formula for the neutral benzoate of iron, and tends to prove on the other hand that an anhydrous bibenzoate of ammonia remains behind on evaporating a solution of benzoic acid in ammonia, at a temperature below 190°; the influence of a higher heat had not been tried.

Philadelphia, March, 1860.

ON THE ROOT OF PODOPHYLLUM PELTATUM.

By William G. Parrish.

(Condensed from an Inaugural Essay.)

The author set out in his investigations with the intention of determining the composition and efficiency of this root, as obtained at several periods of the year. On the 25th of June, a pound (7000 grains) of the fresh root was collected and dried; the dry root weighed 3076.5 grs. Of this, 1920 grains was powdered, and extracted by percolation with alcohol, the tincture

evaporated to a syrup, poured into cold water, and the precipitated podophyllin washed with water on a filter and dried. It weighed 60 grs.

On the 13th of July, another pound of the fresh root was collected and dried. It was larger and more vigorous in its growth than the first, apparently, but it yielded but 2691 grs., showing a greater preponderance of water, as the cause of its increased size. Of this the author took 1920 grs. and treated it by percolation with alcohol, etc., as in the previous experiment, and obtained 67 grs. of podophyllin.

On the 19th of August a third pound was collected and dried, the dry residuum weighing but 1968.75 grs. and presented a more shriveled appearance. 1920 grs. yielded seventy grains of podophyllin, when treated as before described.

On the 17th of September, the fourth pound was collected and dried. The loss was about the same as the last, and 1920 grs. of the dried root yielded 74 grs. of podophyllin.

These results may be tabulated as follows:

7000	grs. podophyllum	collected	June 25,	lost by	drying	3923.5	grs.
7000	"	"	July 13,	"	"	4309.	"
7000	"	"	Aug. 19,	"	"	5031.25	"
7000	"	"	Sept. 17,	"	"	5031.	"

After making a due allowance for the loss by drying, so as to get at the actual amount of resin (podophyllin) yielded by each pound, the following tabulated statement exhibits the proportion of resin in each specimen.

7000	grs. podophyllum	collected	June 25,	contained	96	grs.	resin or	1.37	p. ct.
7000	"	"	July 13,	"	94	"	"	1.34	"
7000	"	"	Aug. 19,	"	71	"	"	1.01	"
7000	"	"	Sept. 17.	"	76	"	"	1.08	"

The author then took 100 grains of podophyllum resin, as prepared by the foregoing, experiment, treated it with ether till exhausted, leaving a residue of only 15 grains, whilst by evaporating the ether 85 grs. of resin, soluble in that liquid, resulted.

The author then experimented with the view of ascertaining the relative activity of the two resins, and says: "I satisfactorily proved by repeated experiments upon myself, and associate in the store, that the alcoholic [resin] was much the stronger cathartic, and not the ethereal, as stated by former

writers on this drug. I took two grains of the resin, soluble in alcohol, which proved an active cathartic, causing eight copious stools during one day, whilst two grains of the resin, soluble in alcohol and ether, only produced one stool."

NOTE.—The results obtained by the author differ in several respects from those of other experimenters. In a recent trial of a process for podophyllin, with a view to the U. S. Pharmacopœia, we obtained 103 grs. of crude resin, from 1920 grains of the dried root, collected in the autumn, which is equal to 4.3 per cent. of the dried root. Mr. Tilden (see Proceedings Amer. Pharm. Assoc. 1859, page 334,) in one analysis obtained 5.25 per cent. of crude resin from the root collected in April, of which 2.85 per cent. was resin, soluble in ether, and in the other, 5.68 per cent. of which 5.51 per cent. was soluble in ether. In the above four analyses of Mr. Parrish, the percentage of the crude resin in the dry roots was 3.12 per cent., 3.49 per cent., 3.64 per cent. and 3.85 per cent., respectively, in the order above indicated. As his examinations were made after Mr. Tilden's spring root analysis, and before his autumn analysis and ours, we must infer that the first was too late, and the last too early, to get the largest percentage of resinous product. As regards the percentage of resin, soluble in ether, the experiment is imperfect, from the fact that the crude resin used must have been a mixture of that obtained by at least two experiments, as in no instance did he get more than 74 grś. of the podophyllin. In regard to the results of the therapeutic effects of the two resins, we can only say that the results of Mr. Parrish agree with those of John R. Lewis, (Amer. Jour. Pharm. vol. xviii., page 169,) the original experimenter on this principle, and differs from those of John W. Cadbury, (ibid., vol. 30th,) and Harvey Allen, (ibid., vol. 31,) who found the ethereal resin the more active. As the medicinal crude resin of commerce contains them both, it is perhaps of less importance to determine this point; but as Mr. Tilden's results show conclusively that the relative proportion of the two resins varies very considerably with the season of collection, it is certainly desirable to determine the following questions:

1. At what season of the year does the dry podophyllum root afford the most resin?

2. Which of the two resins of podophyllin, as separated by *non-alcoholic* ether, is the more active cathartic?

3. At what period of the growth of the root is the more active resin most largely developed?

4. Do roots of the first year's growth from the seed possess as much resin and cathartic power as older roots, and if not, how old should the root be to be most valuable for medical use.—EDITOR AMER. JOUR. PHARMACY.]

ON THE SEEDS OF PHELLANDRIUM AQUATICUM.

By Charles Fronefield, Jr.

(Extracted from an Inaugural Essay.)

The *fine-leaved water hemlock* belongs to the *natural order* Apiaceæ or Umbelliferæ. *Sexual system,* Pentandria Digynia. This plant is biennial or perennial, is a native of Europe, frequenting many of its water courses, rising to the height of from two to four feet. The fruit or seeds are from a line to a line and a half in length, ovate oblong, narrow above, somewhat compressed, marked with ten delicate ribs running the length of the seeds and covered with the remains of a calyx, and with the erect or reverted styles. What is generally regarded as *one* seed is in reality two, closely united at their sides, and of a yellowish brown color.

The *water hemlock* blooms like the Conium maculatum, in umbelliferous clusters, in June and July. The fresh leaves are said to be injurious, and cattle after having eaten them are seized with a sort of paralysis. By drying they are said to lose their deleterious properties ; the odor of the recent seeds is exceedingly strong and disagreeable. Their taste is oily, acrid, and aromatic. The narcotic properties of the plant are said to vary according to the weather and climate, flourishing best in hot, dry seasons. The seeds should be gathered in the autumn, the leaves in the flowering season. The carefully dried seeds retain much of their strong and sickening odor. The decoction, however, has but little taste, and an extract resulting from its evaporation is nearly inert, from which circumstance it may be inferred that the active principle is volatile or decomposible at the boiling temperature. By a series of experiments the author satisfied himself of the presence in these seed of *albumen, gum, a fatty resin, volatile oil, an alkaloid* which he esteems to be *conia,* and in the ashes he detected *alumina, lime, iron and magnesia.* By distilling the ground seeds with water, a light yellow colored volatile oil is obtained, lighter than water, and possessing the aromatic odor of the plant.

When the ground seeds are digested in ether, they yield by its evaporation a dark brownish black extract, containing a fixed oil and a resin, and having the smell of the plant in a high degree, as it retains the volatile oil also.

The activity of the plant appears to reside in an alkaline principle which is analogous if not identical with conia, as when the seeds are rubbed with liquor potassæ, the peculiar mousey odor of conia is exhaled, and a rod moistened with hydrochloric acid, brought near, causes white vapors. The author subjected the ground seeds of water hemlock to distillation with caustic potassæ by Geiger's process, neutralized the distilled alkaline liquid with sulphuric acid, evaporated the liquid to a syrupy consistence, and added anhydrous alcohol so long as sulphate of ammonia was afforded, which was separated by filtration. The alcohol was now distilled off, and the residue mixed with a solution of caustic potassæ, and distilled anew. A yellowish oily matter passed over with the water and floated on its surface. During the process the peculiar odor of the plant was copiously evolved. The amount yielded by one pound of the seeds was somewhat less than a quarter of a drachm. It is very slightly soluble in water, but readily in alcohol and ether; and it reddens turmeric paper and neutralizes acids.

The medical properties of Phellandrium seeds are stated to be aperient, diuretic, emmenagogue, expectorant, sedative, and narcotic. In over doses it produces intoxication and other narcotic effects. It has been used with signal success in chronic pectoral affections, as asthma, bronchitis and pulmonary consumption. Dose from three to five grains in substance.*

ON CITRINE OINTMENT MADE WITH BEAR'S OIL.

By William Prior Creecy.

To the Editor of the American Journal of Pharmacy:

Dear Sir,—I send you with this letter a specimen of Citrine Ointment, in which the neatsfoot oil and lard is substituted by bear's oil. I am under the impression that it is much less liable to change, and is fully as economical as the formula now officinal in the U. S. Pharmacopœia. Bear's oil can be furnished in Philadelphia at a cost not exceeding two dollars a gallon, and

*M. Hutet [Dorvault's Officine, page 452] states that he obtained a neutral liquid from Phellandrium by the process for Cicutin, which had a strong odor and was very active.—Ed. Am. Jour. Pharm.

can readily be obtained in this section of the country *pure*, which is a great desideratum. This is the recipe by which the specimen sent was made.

Take of Mercury	an ounce.
Nitric acid,	fourteen fluid drachms.
Bear's oil,	thirteen fluid ounces.

Heat the oil in a porcelain capsule to 200° Fahr., and add the solution of nitrate of mercury gradually, stirring continuously till effervescence ceases, and frequently till cool, with a glass or porcelain spatula.

Hoping it may prove worthy of a space in your valued Journal, and be of use to pharmaceutists, I subscribe myself yours most truly, WILLIAM PRIOR CREECY.

Vicksburgh, Miss., April 10, 1860.

ON CARYPHA PUMOS, A SPECIES OF PALM.

BY HERMAN FRITSCH.

[Extracted from an Inaugural Essay presented to the Philadelphia College of Pharmacy.]

[This essay, from which the following abstract has been made by the Editor, was worked out by Mr. Fritsch in the laboratory of Dr. Genth, of Philadelphia. It exhibits great care and skill in the author, but its details are too extended, and the subject itself of too little pharmaceutical importance to grant it the space it would require, if printed entire.]

The author begins his Essay by stating the importance of common salt as a necessary mineral element of animal food, and refers to the sources whence inferior races of mankind derive this important substance. He remarks, "An instance of this kind, which is also mentioned in several works by persons who have travelled in Surinam and Brazil, is that of various tribes of Indians inhabiting the interior of these countries who obtain their salt from several species of palm growing abundantly in their immediate vicinity.

By this interesting fact I was induced to investigate the subject by several careful analyses. The specimen which I examined bore the doubtful name of Carypha pumos, a name which I have exhausted all reliable works at my command to

find. It was obtained from a tree, 40—60 feet high, growing in the sandy soil of Surinam. From this variety of palm the natives prepare their salt by burning the stems cut up in logs, boiling the resulting ashes in water, straining, and evaporating the solution in iron vessels. The moist mass which remains behind, and which is a very impure substance, containing, besides chloride of sodium, carbonate of soda, sulphate of potash, and a large portion of carbonate of potash, as will be seen from the analyses, is pressed in round masses several inches in diameter, afterwards wrapped in palm leaf and stored for use. The Indian when hunting always carries with him one or several of these balls suspended by a cord from his waist."

The author then describes his plan of getting the palm ashes, as follows:—"The dry palm wood, after being freed from all adherent impurities, was cut up in small pieces, which were burned at as low a temperature as possible in a shallow dish, by which process it was mostly carbonized. This mass was lixiviated with distilled water to remove the chlorides and the carbonates of the alkalies, as they prevent by their ready fusibility the complete combustion of the particles of carbon still diffused through the mass, and might at the same time partly be lost on account of the volatility of the chlorides. A current of carbonic acid was passed through the liquid to destroy the causticity of any free alkali. The filter containing the carbonized matter was dried and burned in a platinum crucible until all combustible matter disappeared. The crucible was then allowed to cool, and its contents washed into the solution, and the whole evaporated in a silver dish to perfect dryness." This dry mass was powdered and well mixed, and constituted the subject of the analysis, which resulted as follows:

1.801 grms. of ash	gave	0.3487	grms.	of Carbonic acid.
"	"	0.1683	"	of Silicic acid.
" for PO^5	"	0.0874	"	of Pyrophosphate of magnesia.
"	"	0.0822	"	of Proto sesquioxide of manganese.
"	"	0.0609	"	of Sesquioxide of iron.
" for MgO	"	0.3036	"	of Pyrophosphate of magnesia.
"	"	0.2111	"	of Carbonate of lime.
"	"	1.4280	"	of Chloroplatinate of potassium.
"	"	0.6141	"	of Chloride of sodium.
0.890 grms. of ash	gave			
"	"	0.0489	"	Sulphate of baryta.
"	"	0.5844	"	Chloride of silver.

From these results the composition of the ashes may be represented as follows:—

The soluble portion consists of		
Chloride of sodium . . .	26.74 per cent.	
Carbonate of soda . . .	6.79 "	
Sulphate of Potash . . .	4.09 "	
Carbonate of Potash . . .	19.23. "	
		56.85.
The insoluble part of		
Silicic acid	9.34 "	
Proto-sesquioxide of manganese .	4.56 "	
Sesquioxide of iron . . .	3.38 "	
Carbonate of magnesia . .	13.33 "	
Pyrophosphate of lime . .	5.56 "	
Carbonate of lime . .	5.76 "	
		41.93.
	98.78.	

ON THE GREEN FRUIT OF DIOSPYROS VIRGINIANA, OR PERSIMMON.

By John E. Bryan.

(An Inaugural Essay.)

The persimmon is an indigenous tree attaining an average height of 40 feet in favorable situations in the southern and middle States. The trunk is covered with a rough, black and deeply furrowed bark, resembling some of the species of oak. The unripe fruit, which is officinal in the secondary list of the U. S. Pharmacopœia, is the portion which I have selected as a suitable subject for an experimental essay.

It consists of a round or oval berry of a pulpy nature, containing from one to ten well developed seeds of a hard and horny character, arranged in a star-like form. From among a great number of experiments I have selected the following as being most satisfactory.

1st. A quantity of persimmons were gathered about the first of August. At this time they were not more than two-thirds of their size when mature, of a deep green color, and purely astringent taste. An infusion was made and portions tested with solutions of gelatin, subacetate of lead, and acetate of strychnia. These all gave precipitates, the latter soluble in an

excess of the precipitant; and on adding to the infusion a few drops of tincture of chloride of iron it gave a *deep olive green* color.

2d. An infusion was made the same as before, and refusing to filter, I heated it to the boiling point, expecting to find it precipitate; no such effect taking place, I continued the evaporation to dryness. Then, on powdering this extract, and treating it with washed ether, the ethereal liquid gave me by evaporation one-twentieth of the weight of the extract used, of nearly pure tannin, of a light green color, still striking the olive green color with a persalt of iron.

A portion of the residue was incinerated in a test tube and gave an ash entirely *neutral* to test paper.

3d. A portion of the fruit was gathered in the latter end of October. They were now of their full size, and beginning to turn from green to a yellow color, very juicy and sweet and astringent.

An infusion still gave precipitates with the former tests, and the same olive color with tincture of muriate of iron. It was much thicker and more mucilaginous than the former. It was evaporated to the consistence of an extract, which, I observed, absorbed moisture in damp situations and became soft and pliable like India rubber. A portion of these berries were sliced transversely and carefully dried. The segments were hard and brittle in dry weather, but in a damp atmosphere became quite soft and pliable. They lost by the process 112½ parts in 150, but still retained their astringency.

From the fact that the infusions refused to precipitate when boiled, the extracts being gummy and soft, and the dried fruit absorbing moisture, I inferred there was pectin present. Accordingly an infusion of the dried fruit was boiled with carbonate of potassa, and then muriatic acid added gave a gelatinous precipitate characteristic of pectic acid.

4th. 480 grains of the dried fruit were digested in alcohol, decanted and evaporated, which left a saccharine mass, having an astringent taste. This mass amounted to 180 grains, partially soluble in water, seemingly decomposed by a solution of caustic potassa, giving a deep brown color. It was soluble in strong sulphuric acid, giving the same dark color.

The residue from the tincture was treated with water, which removed but little, as the residue when dried weighed 210 grains, which consisted of the cellular tissue surrounded by an *insoluble matter*. This insoluble matter, which could not be separated from the ligneous fibre, was observed in the residue of all the infusions and tinctures.

The preparations were repeatedly tested for *starch* without effect. It has generally been supposed that to render persimmons sweet and edible, the action of frost is necessary; this is not the case, for a portion of the fruit gathered in October, which were hard and astringent, were enclosed in a box and put in a drawer. In a few days, wishing some for an experiment, I opened the box and was much surprised to find that they had become soft, sweet, and of a yellow color, without astringency, except the epidermis, which is always astringent even when ripened in the usual way.

We may conclude then:

1st. That the astringent principle in the persimmon is *tannin*, analogous to that of cinchona, catechu, &c.

2d. That the fruit contains pectin, which increases in quantity as it matures.

3d. That it contains no vegetable albumen, starch, or resin.

4th. That they retain their astringency when dried carefully; and

5th. That there is always an insoluble matter that increases in bulk as the fruit matures.

The persimmon then contains tannin, pectin, sugar, lignin, and coloring matter.

[NOTE.—In the concluding remarks the author states that he has not been able to determine the character of the insoluble matter which is present and increases as the fruit matures. He does not think the sugar is formed at the expense of the tannic acid, but is secreted from the sap of the tree, and he regards the opinion that the disappearance of the tannin at maturation results from its combination with the pectin in a way he does not attempt to explain.

The author evidently has not seen the paper of Benjamin R. Smith, published Oct., 1846, in vol. xviii. of this Journal, to which the reader is referred, as the two papers when considered together mutually throw light on each other. Mr. Smith arrived at the conclusion that the *insoluble* matter of Mr. Bryan was apothegm, or altered tannin, and attributed the

the increase of the apothegm to the decomposition of the tannin by the action of the air, yet at the same time he made the mistake to consider it as oak tannin, which is not thus alterable by atmospheric action. Mr. Smith considers that the tannin also contributes to the increase of the sugar, but in what way is not distinctly made out. He also showed that a part of the lignin disappears in the ripe fruit, and is found in the shape of sugar. He also found that persimmons, which by dropping from the tree rupture their epidermis, lose their astringency much more rapidly than those which remain whole on the tree, which he attributes to the direct action of the atmosphere on the juices.

Mr. Smith found malic acid in small quantity and also proved that the saccharine matter by exposure in a moist state yields malic acid by a sort of fermentation. But he was not able to find pectin, one of the substances detected by Mr. Bryan.—Ed. Am. Journ. Pharm.]

ON SYRUP OF LACTUCARIUM AND SOME OTHER SYRUPS.

By William Procter, Jr.

The attention of medical practitioners has of late been turned to the syrup of lactucarium, and the preparation usually sold by apothecaries in this city is that known as Aubergier's, a French preparation, made by dissolving 30 parts of alcoholic extract of lactucarium in 500 parts of boiling water, straining the liquor and adding it to 15,000 parts of boiling simple syrup, which is kept boiling, and albuminous water added from time to time till it is clarified. It is then skimmed, and 15 parts of citric acid dissolved in it; and when sufficiently reduced by evaporation 500 parts of orange-flower water are added and the whole strained.

This syrup is too dilute, containing but two grains of lactucarium to the fluid ounce, and besides is troublesome to make, and apt to be turbid.

By the following process a syrup can be obtained much more easily, of four times the strength, and quite transparent. It is an adaptation of Finley's process for syrups of oleoresinous substances to this drug.

Syrupus Lactucarii.

Take of Lactucarium,	half an ounce,
Carbonate of Magnesia,	two drachms,
Sugar, in coarse powder,	fourteen ounces,
Alcohol, Water, each,	a sufficient quantity.

Rub the lactucarium first with the carbonate of magnesia and an ounce of sugar until thoroughly reduced to powder, and then with a fluid ounce of alcohol; after which pour in water with constant stirring until half a pint has been added. The whole is now poured into a paper filter; and after the liquid has ceased to pass, pour on more water until a pint has been obtained. Evaporate this liquor to nine fluid ounces by a moderate heat (150° F.), add the remainder of the sugar, and by the aid of heat form a syrup which should, when finished, measure a pint.

Syrup of lactucarium thus prepared has the sensible properties of the drug in a marked degree, is perfectly transparent, with the color of officinal paregoric at first, but becomes rather darker. Each teaspoonful contains the soluble portion of nearly two grains of lactucarium, or 15 grains to the fluid ounce.

Syrupus Capsici.

Take of Cayenne Pepper, in fine powder,	two drachms,
Carbonate of Magnesia,	one drachm,
Sugar, in coarse powder,	fourteen ounces, troy,
Alcohol, Water, each,	a sufficient quantity.

Rub the Cayenne pepper first with the carbonate of magnesia and sugar, and then with a fluid ounce of alcohol, and slowly pour in the water until six fluid ounces have been added. The whole is then to be transferred to a proper filter; and when the liquor has ceased to pass, pour on water until nine fluid ounces of filtered liquor are obtained. To this add the remainder of the sugar, and by a gentle heat form a pint of syrup.

Made in this manner syrup of capsicum is a pungent yellowish brown syrup, each teaspoonful of which contains nearly two grains of Cayenne pepper.

Syrupus Balsami Peruviani.

Take of Balsam of Peru,	two drachms,
Carbonate of Magnesia,	two drachms,
Sugar, in powder,	fourteen ounces,
Alcohol, Water, each,	a sufficient quantity.

Proceed in the manner directed for syrup of capsicum, and make a pint of syrup.

I have tried this process with cubebs and its oleoresin, with assafœtida, and some other substances where the chief virtues reside in volatile oil and resin, without a satisfactory result, but there are many others to which it may be applied.

GLEANINGS FROM THE FRENCH JOURNALS.

By the Editor.

Influence of Fatty Bodies on the Solubility of Arsenious Acid.—M. Blondlot, of Nancy, calls the attention of toxicologists to the fact that arsenious acid, in the presence of even small quantities of fatty oils, has its solubility in water, or even slightly acidulated or alkaline water, reduced to 1-15th or to 1-20th of what it is under other circumstances where the fatty matter is absent. The constant occurrence of fat in food and its presence in the stomach must more or less modify the rapidity of the action of arsenic, and accounts for some discrepancies in the record of poisoning by this agent.

The author deems it proper, in view of this property of the fixed oils, to recommend their use, and especially in the form of milk, as an antidote in the absence of the more certain agents, or whilst they are in preparation.—*Journ. de Pharm., March* 1860.

Synthesis of Salicylic Acid.—MM. Kolbe and Lautermann have succeeded in preparing salicylic acid $C^{14}H^{6}O^{6}$ by passing a stream of carbonic acid gas into hydrate of phenyl, whilst at the same time fragments of sodium are projected into it. Hydrogen is disengaged and salicylate of soda is formed. This is dissolved in water, chlorhydric acid added heated to boiling, when on cooling salicylic acid separates in crystals.—*Annalen der Chem. und Phar. in Joun. de Pharm.*

On the non-poisonous nature of Methyl-strychnia and Methyl-brucia.—M. Stahlschmidt (Ann. der Phys. und Chem.) has determined that when an equivalent of hydrogen in either strychnia or brucia is substituted by methyl (C^2H^3), these bases become innoccuous. The author by experiment found that a rabbit which took five grains of methyl-strychnia without any bad symp-

toms died in five minutes when one-twentieth of a grain of strychnia was put on its tongue. This modification of the poisonous properties of strychnia appears to be due to *methyl*, because, as the author remarks, the hydrocyanate of methyl is perfectly inoffensive.

Methyl-strychnia is prepared by placing strychnia in fine powder in contact with iodide of methyl forming a new combination which is an iodide of methyl-strychnia. Its formula is $C^{44}H^{24}O^4N^2I$. It is very soluble in hot water, but requires 212 parts at the ordinary temperature. The salts of silver decompose it, and by contact with oxide of silver the base is set free. It is obtained most easily by decomposing the sulphate with baryta water, filtering and crystallizing in long yellow crystals containing 16 or 17 per cent. of water. In this hydrated state it is very soluble in water and alcohol, but insoluble in ether. The translator, M. Nickles, queries whether the methyl bases derived from quinia, conia, and nicotine may not be thus altered in their toxical relations.—*Journ. de Pharm. et de Ch., March*, 1860.

Urate of Quinia.—Dr. E. Perayre, of Bordeaux, has suggested this salt for use in medicine on the ground that many cases of intermittent fever have been cured by the ingestion by the patients of a certain portion of their own urine. Urate of quinia is prepared as follows: 10 parts of quinia and 20 parts of crystallized uric acid are employed. Into a suitable vessel 500 parts of distilled water is poured and heated to ebullition, the quinia added, and boiled ten minutes; the uric acid is then added in fractions, and the mixture agitated with a spatula, and the boiling continued an hour, adding water to preserve the measure; the liquid is then poured off and filtered and an equal measure of water poured on, boiled 20 minutes and filtered. Unite the liquors, and evaporate to dryness by a gentle heat. A yellow colored salt results, partly amorphous and partly crystallized in brilliant tables. Urate of quinia is soluble in boiling and hot water, but much less easily in cold water.

The author attributes to this salt the advantage of curing intermittents better than the sulphate, in a smaller dose, and has less tendency to produce the singing in the ears and cerebral excite-

ment. It also is less bitter and is more easily tolerated by the stomach. The dose is half that of the sulphate—3 to 3½ grains in twenty-four hours.—*Journ. de Pharm. et de Ch., Fev.* 1858, *from Mon. des Sci. Med. et Ph.*

Veratria in Pneumonia.—Prof. Vogt, of Berne, gives as much as five milligrammes (1.13th of a grain) of this alkaloid every two or three hours till the production of vomiting and reduction of pulse. He administers the veratria in pills ordinarily, but were these nauseate very easily, gives it in solution. The quantity necessary to be given to produce the desired effect is from 25 to 30 milligrammes usually; but in certain cases, not very susceptible, as much as 50 to 60 milligrammes may be given in 24 hours. If the stomach is very irritable, the dose is reduced to 2½ milligrammes every 2 or 3 hours, given with a little opium, or in an effervescing powder. The effect on the pulse is more slowly produced, but is equally certain. *Répertoire de Pharmacie*, Feb. 1860. This use of veratria is equivalent to the extensive dosing with veratrum viride now so prevalent in the United States. Does not this show that it *is* veratria in this plant which acts as an arterial sedative?

On the part played by Quercitrin in the Coloring of Flowers, by M. Hlasiwetz.—Quercitrin has been found in the flowers of Reseda luteola, Capparis spinosa, and recently in those of the horse chestnut. It is a characteristic of quercitrin and its derivatives to yield various colors by decomposition under certain circumstances, and the author thinks that nature may effect these metamorphoses as well as the chemist. It is sufficient to add one sixty-fifth of a grain of *quercetic* acid to 21 pints of alkaline water to get a beautiful rose color. A solution of quercetrin is colored green by traces of iron salts; and an infinitesimal quantity of *quercetic* acid is sufficient to give a blue color to a weak solution of chloride of iron. With these reactions there is no difficulty in explaining the play of colors presented by the flower of the hyacinth, the tulip and the dahlia.

On Quinio, a crude quinine.—M. Batka (Chem. Central-bl.

1859) states that under the name of *quinio* a product of cinchona bark is known in Brazil, prepared from the fresh bark by aid of lime and alcohol. It is very rich in quinine, and yields the crystallized sulphate by boiling with dilute sulphuric acid. It is a yellow, resinous looking substance, insoluble in cold water, gives bitterness to hot water, and is very soluble in alcohol and ether. It is free from cellulose, and leaves only a small ash of carbonate of lime by incineration.—*Jour. de Pharm.*

Iodoacetic Acid.—MM. Perkin and Duppa (Annalen der Chem. und Pharm.) have succeeded in making this new acid by decomposing bromacetic ether by means of iodide of potassium in powder; the liquid becomes yellow and becomes sensibly heated. After some hours' repose in the dark, at the temperature of 104° to 122° F., the bromide of potassium is separated by a filter, and the liquid boiled with baryta water until the odor at first produced is dissipated. The excess of baryta is now eliminated by a current of carbonic acid gas, when the liquid is filtered and evaporated to get crystallized iodoacetate of baryta, from which the acid can be separated by means of sulphuric acid. Its formula is $C^4H^3IO^4$, and may be obtained in crystals by evaporation in vacuo over sulphuric acid. When boiled with oxide of silver it gives glycolic acid.

The alkaline iodoacetates are deliquescent. Iodoacetic ether is an oleaginous liquid, heavier than water, with an irritating odor. It is decomposed by light.—*Jour. de Pharmacie et de Ch., Fevr.* 1860.

Purification of Arseniferous Phosphoric Acid.—M. Werbrunn, (Arch. der Pharm.) says that arsenious acid, when present in phosphoric acid, may be removed by boiling its solution with hydrochloric acid, which converts the acid into chloride of arsenic, which is then volatilized with the excess of muriatic acid.

Preparation of Nitrate of Silver, by M. Greiner, Pharmacien of Schiltigheim, near Strasburgh.—Take any quantity of silver coin, dissolve it in nitric acid, precipitate the impure nitrate of silver thus obtained by a solution of sulphate of soda till it ceases to yield, wash the sulphate of silver, and then decompose

it with a hot solution of nitrate of baryta. The sulphate of baryta is then removed by filtration through asbestos, and the clear solution of nitrate of silver evaporated and crystallized.—*Jour. de Chimie Med., Janv.* 1860.

Root of Hibiscus esculentus, or Okra.—G. Della Sudda states (Répert. de Pharm., Janv. 1860) that this root is largely employed at Constantinople and other portions of the East, as a demulcent, in the same way as althæa root is used in Europe, and seems to possess much the same properties. This vegetable originated in the East Indies, then extended into other parts of the world, its fruit being, as is well known, much used as an article of diet for soups.

In the neighborhood of Constantinople and in the interior, its culture is conducted on a large scale, entire plains and vallies being covered with it, in fields requiring but little care or manure. The size attained by the fruit varies much, being from an inch to ten or twelve inches. The recent roots have a length of from 18 to 24 inches, with a diameter of half an inch to an inch and a half; yellowish white epidermis, removed easily by rubbing, and yields by pressure a thick mucilaginous juice in great abundance. In equal quantity compared with the althæa root, it yields double the quantity of mucilage, and free from the odor of the althæa. Its powder is beautifully white, and superior in all respects to that of the marshmallow.

Easy means of Silvering Copper and Brass Surfaces.—M. Boudier recommends a powder composed of 12 parts of cyanide of potassium, 6 parts of nitrate of silver, and thirty parts of prepared chalk. Rub the surface to be silvered with a moist rag which has been dipped in this powder, and a deposition of silver takes place which is strongly adherent, and may be used advantageously to apply to some utensils before bringing them in contact with acid fruits.—*Répert. de Pharm., Janv.* 1860.

Adulteration of Rhubarb.—In France as well as in England the powder of Turkey rhubarb, it seems, is extensively adulterated with that of the home grown root. M. E. Billot gives a method of detecting this adulteration, which, if successful, is cer-

tainly very simple. Place a little of the suspected rhubarb in a glass, or on a plate, and drop on it two or three drops of some essential oil, either bergamot, aniseed, or fennel, then add a little magnesia, and rub them together for three or four minutes. If the rhubarb be pure Turkey or Russian, the powder remains of a yellowish color; but if it contain a mixture of French (Rheum rhaponticum) it assumes a tint which will vary from a salmon to the brightest rose-color, according as there is little or much of the adulterating ingredient. We can by this means, says M. Billot, discover the least trace of fraud, and the test can be used by anybody, as it requires neither study nor manipulatory skill.—*Chem. News, London, Feb.* 4, 1860, from *Science pour Tous.*

The Comparative Value of different Species of Aconite.—The various species of aconite, like the various species of cinchona, are known to contain different proportions of the active principle. The *aconitum paniculatum* is found to possess the least, and the *aconitum napellus*, which resembles in all points, in its botanical characters as well as its energetic properties, the *aconitum ferox* of the Himalaya, is found to yield the most aconitine.

The alcoholic extract furnished by an equal weight of fresh leaves of the two sorts differ notably. The *aconitum paniculatum* yields a third more product; but the extract of the aconitum napellus furnishes a considerable quantity of aconitine, while that of the paniculatum gives only a trace. The aqueous extract of the aconitum napellus is almost inert, the reason being that *tannate of aconitine*, which water alone will not dissolve, is formed in the marc during the preparation of the extract.—*Chem. News, London, Feb.* 4, 1860, from *Rep. de Pharm., Nov.*, 1859.

NOTES ON LACTUCARIUM AND ITS PREPARATIONS.

By Edward Parrish and William C. Bakes.

Sixty years have elapsed since the now venerable Dr. J. Redman Coxe, of Philadelphia, announced through the Transactions of the American Philosophical Society, the preparation of a concrete exudation from the mature lettuce plant, having narcotic properties and so nearly resembling the product obtained from the poppy as to be denominated Lettuce Opium.

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Numerous essays have since appeared treating of this subject in its chemical relations; herb growers have experimented upon its production, and practitioners upon its use, with the result of placing it permanently among the list of officinal drugs, being, like many of that class, highly esteemed by some, pronounced unreliable by others, and wholly neglected by the large majority of physicians.

Among the causes of the popularity of particular remedies, their physical characteristics, facility of employment, and adaptation to the ordinary forms of preparation will be found to exercise an important influence, and perhaps the principal obstacle to the general adoption of lactucarium as a remedy may be found in its unusual toughness and resistance to mechanical division and to the action of ordinary solvents.

There is frequently a demand for a good substitute for opium not possessed of its astringency or of the peculiar properties which so often forbid its use, and lactucarium has been found by many to meet this demand; yet there are, no doubt, thousands of druggists who do not number it among their articles of stock, or if they keep it at all have perhaps a few drachms laid away among the rareties which invariably accumulate in some secluded corner of the shop.

There are few drugs produced so near home, about the varieties and sources of which so much confusion exists among well informed pharmaceutists. There are three well marked commercial articles under this name in our market.

First. The so-called English lactucarium, in small, irregular, brittle masses, from the size of a pea to that of a chestnut, of a dark brown color, heavy narcotic odor, a rather slow but decided bitter taste—a few pieces having a white efflorescence upon them.

Second. The so-called German lactucarium, occurring in larger pieces, varying from the size of a hickory nut to that of a walnut; these are convex on one surface, and generally sections of a sphere or of a cup-shaped mass of, perhaps, 3 inches diameter, the inside surfaces being concave from the shrinking occasioned by drying; the color of this variety is much lighter than the foregoing, the odor, though narcotic, not quite so heavy; it is not so friable as the English, and when fractured the pieces present within, soft white spots. We have known this variety in commerce for a number of years, but do not meet with any

description of it in the books at hand; it is evident that although it comes from the continent of Europe, its shape is that resulting from the process said to be pursued in the neighborhood of Edinburgh for the collection and drying of the juice.

The *third* variety is called Thridace, or French lactucarium. This is evidently not collected from incisions in the living plant as the other varieties, but is an extract obtained by the evaporation of the expressed juice of the stalks gathered at the season of their maturity; it has a darker color than either of the other varieties, is deliquescent, and generally occurs in fragments of cakes, as though dried upon a flat surface. The botanical sources of these several kinds of lactucarium are as obscure as their commercial history; as far as we know there is no certainty which of them are derived from *Lactuca virosa*, which from *L. sativa*, and whether any of them are derived from the *L. altissima* as recommended by M. Aubergier of Clermont, or from other botanical sources.

The price of the English variety is maintained at about $1.25 per ounce, while the German article, which is largely imported, is sold at less than half that price, and the French, though very little in demand, is still lower. The general impression is in favor of the superiority of the English, and we are informed that this obtains even on the continent of Europe, while the French thridace is little used, except as a domestic expectorant remedy.

The experiments we have tried aim at determining proximately the relative value of the two kinds designated as German and English, at the same time that it has been a leading object to find out the best mode of preparation. Omitting any details which do not tend directly to elucidate one or other of these points we note the following results. English Lactucarium by thorough exhaustion with diluted alcohol furnished a bitter tincture, which on evaporation yielded 44 per cent. of extract of a reddish brown color, of intensely bitter taste, reminding of the drug; this was not wholly soluble either in water, diluted alcohol, or strong alcohol. German Lactucarium yielded by the same treatment 36 per cent. of extract of a somewhat lighter brown color, equally bitter with a heavier narcotic odor and with a consistence more distinctly resinous and even brittle.

By strong alcohol the German yielded very nearly 50 per

cent. of extract still lighter in color, some portions separating during the process in nearly white granules destitute of bitterness, probably the so-called Lactucone rendered soluble by a portion of the menstruum having been added hot, and then precipitated on its cooling. Of the dregs left after the thorough exhaustion by alcohol, only 25 per cent. were soluble in benzine. Considerable importance attaches to the temperature at which these evaporations are conducted, the most soluble extracts resulting when the temperature does not rise above 160° F. The manipulation pursued in the extraction of specimens consisted in first reducing them to as fine a powder as practicable by trituration and then percolating with the menstruum as long as it continued to be charged with the color and taste. Very considerable amounts of the alcoholic menstruum were necessary, while by this process water seemed to exert but little solvent action on the German variety.

Acting on the suggestion of William Hodgson, Jr., (American Journal of Pharmacy, Vol. xxx. p. 116,) a purified Lactucarium was prepared by depriving the crude drug of its "Caoutchoucoid matter." Benzine was selected as the best and cheapest solvent for this inert and very objectionable constituent; the German variety by this means yielded 42 per cent. which was left on evaporation as a nearly white tenacious mass without odor or taste. The purified lactucarium obtained was just half the weight of the drug; it was found to yield to diluted alcohol 66 per cent.; to strong alcohol 40 per cent.; to boiling water, 25 per cent.; and to boiling water acidulated with citric acid, 30 per cent., of its weight. It was readily reduced to fine powder, and after complete drying was free from the odor of benzine. Almost the whole of the odorous principle is extracted by Benzine, and as this is stated to be a sulphuretted oil, and the distilled water of lettuce is reputed to possess sedative properties, the purified lactuarium thus obtained can hardly be said fully to represent the drug.

The principal preparation of lactucarium now employed is *Aubergier's syrup* made by triturating 45 grs. of the Extract of English Lactucarium with 15 grs. of citric acid,* and sufficient

* Some recipes for Aubergier's syrup omit the citric acid, which, however, exerts a very favorable influence on the solvent action of water and furnishes a clear syrup where the preparation would be turbid without it.

boiling water to constitute with the proper proportion of sugar, a pint of syrup; this is then flavored with distilled orange flower water, and directed as an adjuvant in expectorant and numerous other mixtures, or given alone in doses of a teaspoonful. To this very popular remedy there are two objections, it is too weak and not sufficiently uniform, though very agreeable and much prescribed by some of the most successful practitioners.

Having often had occasion to make this syrup in considerable quantities, we notice that there is always a portion of undissolved extract, even when we have taken the precaution to add the hot syrup to the mixed acid and extract, a precaution which favors its complete solution. A carefully performed experiment with hydro-alcoholic extract treated with the acid and boiling water, as directed by *Aubergier*, left just one-third the weight of the extract undissolved; this portion was intensely bitter, and yielded 40 per cent. of its weight to strong alcohol, the exhausted dregs remaining were somewhat crystalline, but insoluble and apparently inert.

Convinced by our experiments that diluted alcohol is the very best solvent for this drug, an opinion which accords with that of *Aubergier*, and that an extract whether made with this solvent or with stronger alcohol becomes partially insoluble by inspissation to the solid consistence and is hence unsuited to make the fluid preparations required, we have found the most economical and efficient treatment to be that which thoroughly exhausts the drug, whether English or German, by diluted alcohol and arrests the evaporation at such point as to make each fluid-ounce equal to a weighed officinal ounce of the drug. The fact of the comparative insolubility of the active principles in aqueous menstrua makes it necessary to add alcohol toward the close of this evaporation, or rather to separate the resinoid deposit (which in the German has a light brown color, but in the English is black,) and by trituration with strong alcohol to produce a complete solution before the quantity of resulting fluid extract is finally reached; the fluid extract as thus prepared is black and intensely bitter, with a heavy narcotic odor. Any other forms of preparation which may be prescribed can be conveniently made of this fluid extract.

A tincture may be made by mixing two parts of fluid extract

with six parts of diluted alcohol; it will then approach the strength of laudanum and may be given in similar doses.

The syrup is designed to be a weak preparation adapted to use as an expectorant. We see no advantage in attempting to combine the objects of a powerful narcotic remedy with the form of syrup, a form best adapted to mild anodynes. The proportion of two grains to the ounce furnishes a stronger preparation than *Aubergier's syrup*, supposing that in the latter the whole strength of the remedy were extracted, and we think we have gained the appropriate strength in the preparation now offered.

Syrup of Lactucarium.

Fluid extract of English Lactucarium,	a fluid drachm.
Sugar	thirty ounces, (offic.)
Water	thirteen fluid ounces.
Distilled orange flower water	two fluid ounces.

Triturate the fluid extract with a portion of the sugar, then dissolve this and the remainder of the sugar in the water by the aid of heat, strain, and when nearly cold add the orange flower water. If the fluid extract of German Lactucarium is used, the proportion should be increased, probably about 25 per cent. although we have no evidence founded upon experiment as to the relative therapeutic value of the two commercial varieties.

We have not referred particularly to the process of M. Gustin, in which water acidulated with nitric acid is the menstruum, as we cannot conceive of this furnishing a fair representative of lactucarium, nor to the formula of our colleague T. S. Wiegand, in which the use of carbonate of potassa is directed; this is particularly adapted to English lactucarium and furnishes a strong preparation but not an elegant one, a characteristic which is fatal to its general adoption.

ON SOME SPECIMENS OF DUGONG OIL.

By W. T. Fewtrell.

A few years ago Dr. Hobbs, the health officer at Moreton Bay, introduced the oil obtained from the dugong as a substitute for cod-liver oil. This animal is one of the herbivorous cetacea,

and is found on the northern coast of Australia, in the Red Sea, the Persian Gulf, and also in the Indian seas. *Dugong doujoung*, or *dugong*, is a Malay word, which signifies sea-cow. The Dutch in the Indian archipelago called it *zee-koe ;* among the Spaniards it was known as the *pesce done*, or sea-woman ; and French naturalists have given it the name of *halicore*, sea-girl or syren. The Red Sea variety has been named by Ruppel the *Halicore tabernaculus*, in consequence of historical researches having led him to the conclusion that it was with the skin of this animal that the Jews were ordered to veil the tabernacle. In the Indian seas it is sometimes found of large size, from 18 to 20 feet long; but in Australia it is seldom found longer than 12 or 14 feet. The following description of the animal is borrowed from the *Naturalists' Library* and other works. In its general form the dugong resembles the common whale. The skin is smooth and thick, bluish above and white beneath, with a few remote and scattered hairs; the mammæ are situated on the chest, under the fins. The head is small in proportion and of a peculiar form. The upper lip is very large, thick, and obliquely truncated, forming a short, thick, and nearly vertical kind of snout, something like the trunk of an elephant cut short across. The surface of the truncated portion is covered with soft papillæ, and furnished with a few bristles; the lips are covered with a horny substance which assists in tearing the sea-weeds for food. The lower lip is much smaller, and resembles a round or oblong chin. To assist the animals in browsing upon the submarine vegetables, the anterior portion of the jaw is bent downwards at an angle, in such a way as to bring the mouth into a nearly vertical position. The greatest peculiarity of the animal is that the ventricles of the heart are widely detached from each other, being connected at the base only. Another singular circumstance is that the *inside* of the cheeks are studded with strong projecting bristles. The pectoral fins, resembling swimming paws, have no nails, but are verrucose. The tail is broad, horizontal, and crescent-shaped.

"Its favorite haunts are the mouths of rivers and straits between proximate islands, where the depth of water is but trifling (three or four fathoms), and where, at the bottom, grows a luxuriant pasturage of submarine algæ and fuci. Here, in calm

weather, may small troops be seen feeding below the surface, and every now and then rising to take breath. The position of the mouth, the muscular powers and mobility of the lips, garnished with wiry bristles, and the short incisor tusks of the upper jaw, enable these animals to seize and drag up the long fronds of sub-aquatic vegetables, which constitute their nournishment. The mutual affection of the male and female is very great, and the latter is devoted to her offspring. If a dugong be killed, the survivor of the pair, careless of danger, follows after the boat carrying the body, impelled by an overmastering passion, and thus often shares the fate of its partner; indeed, if one be taken the other is an easy prize."

It is taken byMalays and also by the aborigines of Moreton Bay for the sake of its flesh, which is said to be very delicate and palatable, and to resemble young beef. The natives of Australia also use the oil for burning. Mr. Archer, who was at Moreton Bay before the oil was used as a medicine, tells me that the natives waited until a shoal got into a shallow water, and then surrounded and drove them into large nets. The oil was obtained by skinning the fish and then boiling down the "speck." Not much was obtained, the annual produce being estimated at about 200 gallons. Mr. Archer adds that, when opened, the stomach of the animal was always found full of sea-weeds and *live worms*.

Now that a large demand for the oil has sprung up, a fishery has been organised, and the dugong has been taken in great numbers, but still not sufficient to supply the amount of oil in requisition; and the deficiency would appear to be made up from an altogether different source.

But small quantities of what is called dugong oil have arrived in England, and I have only had the opportunity of examining three specimens. One was kindly given to me by Dr. Letheby, who received it some years ago, before the oil was in repute. Another, also given to me by Dr. Letheby, was, I believe, received at the Comsumption Hospital a few mouths ago. The third was imported expressly for me by Messrs. Johnson and Archer, Australian merchants. The price paid in Australia for a bottle containing about a pound and a quarter was 12*s.* 6*d.* All these specimens are solid at the ordinary temperature of the

air, but with the first (which is of a brown color) there is a small quantity of dark colored oil on the surface. The others are white and perfectly solid. Considering the supposed source of the oil, it would be imagined that the dugong oil would present the same appearances, have the same smell and behave in the same way with chemical tests as the oils obtained from other cetaceans. Such, however, is not the case with the specimens I have examined, except, and then but partially, with the first. Of the smell of the first it is impossible to speak, for it has become so rancid that the natural smell of the fresh oil must be entirely gone. The other two, when cold, have a faint odor of tallow, which is greatly heightened when the oil is made hot. Strong sulphuric acid dropt on the first produces a deep brown color—on the other two, only a pale yellow color. Chlorine gas passed through the first deepened the original brown color, but the other two were unaffected by it. Now, remembering the action of these reagents on the oil from other cetaceans, I am inclined to think that neither of these three samples is genuine. I speak with diffidence in the absence of a well authenticated specimen to use as a standard of comparison; but I believe that two out of three are entirely factitious (mixtures probably of a vegetable oil with some solid animal fat), and that the other is largely adulterated. I am confirmed in this opinion by the following statement made by Dr. Hobbs in the *Melbourne Argus*:—"During a given period, when there was being sold in Sydney 50 gallons weekly, and in Melbourne 100 gallons weekly, there was little more than 100 gallons got from the Bay."

Under these circumstances, I would recommend an importer to receive with caution any consignment of the so-called dugong oil. It does not seem to possess any decided advantage over cod-liver oil, and its principal recommendation in Australia is that it is a colonial production. The very high price will prevent the export of much to England; and in a few years the supply will most likely cease. Several years ago a Frenchman wrote: "Tout annonce que dans quelques années le dugong aura entièrement disparu de dessus le globe;" and it is likely that the prophecy will be speedily accomplished as far as Australia is concerned.—*Chem. News, London, Jan.* 28, 1860.

NICKEL.

M. Charles Tissier has communicated to the Paris Academy of Sciences a note upon some peculiar properties of nickel. This metal, which is placed near to iron in the electro-chemical tables of Berzelius, as also in the classification of metals in families by Ampère, is again brought near to the latter metal in M. Thénard's classification according to the affinity of metals for oxygen. However, although nickel resembles iron so closely by its atomic weight and by analogous compounds, such as its salts, such is not the case when we consider nickel in other respects; thus it is generally supposed, on account of its place in the electro-chemical series, that nickel will precipitate copper from its solution as zinc and iron do. M. Tissier assures us, however, that no such phenomenon takes place. He has left pure fused nickel for 15 hours in a liquid containing a mixture of chloride of ammonium and sulphate of copper (1 part) and water (10 parts). At the end of this time no copper had been precipitated, and the piece of nickel which weighed 18·925 grammes before the experiment, weighed exactly the same when it was terminated. A piece of bronze of aluminium placed in the same conditions has been found to lose 6 per cent. of its weight, and a piece of German silver more than 7 per cent.

All acids, save nitric acid, have only a weak solvent power on melted nickel. In 15 hours sulphuric acid, diluted with twice its weight of water, only dissolved 0.032 grammes of 18 grammes submitted to its action. Strong hydrochloric acid only dissolved 0·15 grammes of the same quantity in the same time.

When these results are compared to those obtained with iron, zinc, copper, lead and tin, it is seen how superior nickel is to these metals, and how much nearer it comes to silver; for like the latter it appears to be attacked with ease by nitric acid alone. According to M. Wertheim the tenacity of nickel is to that of iron as 90 is to 70. M. Tissier next informs us that nickel can be obtained in France, in the pure state, at 10 francs a pound (Eng.), or 20 francs the kilogramme, and that, at this price, with the properties it possesses, it is capable of many useful applications, among others that of serving in calico printing to take off the excess of color or mordant from the cylinders. The

bars at present used for this are of steel, which is soon attacked and destroyed by the sulphate of copper and other mineral substances employed as mordants of colors.—*Chem. News, London, Jan.* 21, 1860, *from Comptes Rendus, Jan.* 9, 1860.

NEW REAGENT FOR ALKALOIDS.

M. Schulze has observed that if perchloride of antimony be added drop by drop to a solution of phosphoric acid, a liquid is obtained which produces with ammoniacal salts, and with most of the alkaloids, precipitates similar to those which are formed by the phospho-molybdic acid of Sonnenschein; the following are the effects observed:—

Strychnine.—Solution of the nitrate at $\frac{1}{1000}$th abundant yellow caseous precipitate; at $\frac{1}{5000}$th white floculent precipitate; at $\frac{1}{25000}$th slight turbidity.

Brucine.—Solution of the hydrochlorate at $\frac{1}{1000}$th a rose-colored precipitate, soluble whilst warm, reprecipitated by cooling, leaving the supernatant liquid of a carmine red; at $\frac{1}{10000}$th the sesquichloride is still troubled, and the liquid takes a rose tint.

Quinine.—At $\frac{1}{1000}$th flocculent precipitate of a clearer color than that of strychnine; at $\frac{1}{5000}$th the liquid becomes opalescent.

Cinchonine.—At $\frac{1}{1000}$th blue flocculent precipitate; at $\frac{1}{5000}$th slight turbidity.

Veratrine.—At $\frac{1}{1000}$th dirty white flocculent precipitate; at $\frac{1}{5000}$th the liquid becomes opalescent.

Narcotine.—At $\frac{1}{1000}$th copious yellow flocculent precipitate; at $\frac{1}{4000}$th turbidity; at $\frac{1}{25000}$th a turbidity in the liquid is still perceived.

Morphine.—At $\frac{1}{1000}$th the liquid is too dilute to produce a precipitate.

Codeine.—At $\frac{1}{1000}$th the turbid liquid takes a dirty brown color.

Nicotine.—At $\frac{1}{250}$th slight turbidity in the liquid.

Coniine.—At $\frac{1}{250}$th liquid becomes slightly opalescent.

Piperine.—Yellow coloration even in diluted liquids.

Atropine.—At $\frac{1}{1000}$th caseous white precipitate, soluble in the

warm liquid, completely thrown down again by cooling; at $\frac{1}{5000}$th slight turbidity, which becomes more sensible by long boiling.

Digitaline.—At $\frac{1}{1000}$th slight turbidity, which at first disappears by boiling, and then gives place to a voluminous precipitate.

Aconitine.—At $\frac{1}{1000}$th copious white precipitate; at $\frac{1}{5000}$th turbidity; at $\frac{1}{25000}$th liquid becomes opalescent.

Caffeine.—At $\frac{1}{1000}$th no reaction.

Theobromine.—At $\frac{1}{1000}$th slight muddiness.—*Chem. News, London, Jan.* 21, 1860, *from Journ. de Pharmacologie de Bruxelles, Dec.* 1859.

NEW APPLICATION OF COLLODION IN THE ARTS, BY PATENT.

Collodion and castor oil have received a new application. Messrs. Barnwell and Rollason use the mixture for making silks and other woven fabrics waterproof. Their manner of proceeding is as follows:—"Assuming the material under operation to be silk, we take collodion and mix it with vegetable oil, such as either hempseed, rape, olive, almond, nut, poppy, castor, cotton, or linseed oil, in the purest possible state, and we find that such oils when mixed with collodion undergo a change upon being subjected to heat, and this change or decomposition is highly advantageous in the subsequent processes to which the silk will be applied. The mixture of collodion and oil is spread or poured upon plates or cylinders of metal or glass, and before it is quite set the silk is laid or rolled over it and immediately removed, bringing away with it a thin film of collodion and oil. The silk thus coated is now removed to a stove or drying oven and submitted to a heat of 100° to 300° Fahrenheit, by which the mixture undergoes the before named change or decomposition, and the result is that a slightly glazed appearance is imparted to the silk, which is at the same time considerably strengthened or thickened, and may be rendered almost or quite opaque by the mixture of coloring or thickening matter with the collodion and oil. A thin silk is thus rendered equal in strength to a more

costly one, and the quality of imperviousness to water, which the material possesses in a high degree, will be of service."

The patentees prepare their collodion with gun cotton or with xyloidine made from hemp, flax, jute, straw, sawdust, or starch, which they dissolve in any of the solvents of gun cotton and mix with any of the oils before mentioned, adding only so much of the oil or mixed oils as will be freely taken up by the solution. If they desire the coated silk or other fabric to be soft and pliable in its nature, they add a small quantity of animal oil to the solution. The proportions the patentees use for coating silk are 30 parts of the xyloidine dissolved in *about* 300 parts by weight of ether, with 100 parts of spirits of wine, with which is mixed from 75 to 100 parts of vegetable oils. This solution is allowed to evaporate in a still until it arrives at such a density that it will only just flow evenly over a glass plate, so as finally to leave a substantial film behind it.

If the patentee can make some light and inexpensive fabric waterproof, and at the same time soft and pliable, it would be extensively used by surgeons. Oiled silk is expensive, and the oiled calico and gutta percha tissue, sometimes used in its stead, lack the softness and pliability desired. The article we have suggested is greatly desired in our large hospitals.—*Chem. News*, *London*, *Jan.* 21, 1860.

POISONING BY TINCTURE OF ACONITE.

Dr. Heighway reported the case of a lady, an inmate of his family, who had taken a tablespoonful of the tincture of aconite root, in mistake for the compound tincture of cinchona. At the time of the committing of the mistake he was not at home. On his arrival, he found the patient almost pulseless. Every object looked green to her, and she complained of an intense heaviness about the stomach.

The first symptoms, he learned, were twitching of the muscles about the eye and nose, which continued until they became very distressing. There were also tingling sensations of the upper and lower limbs.

As he had no doubt, when he first saw the case, that absorption of the drug had taken plaee, he did not administer any

emetic, but ordered brandy to be used freely, and directed a drachm of aromatic spirits of ammonia, with six or eight drops of tincture of camphor to be given every fifteen minutes. In a short time the pulse somewhat improved.

By the advice of Prof. Foote, of whom he inquired for an antidote for aconite, he prepared the following mixture: one pound of green coffee, boiled in a quart of water to a pint, then add a pint of alcohol and an ounce of gum camphor. Of this ten or twelve drops were given every ten minutes. After taking several doses of this she became somewhat relieved; the twitching and tingling mentioned, however, continued for some time.

At three or four o'clock in the morning of the next day she went to sleep, and at seven all symptoms of poisoning had disappeared.—*Druggist, Dec.*, 1859, *from Cin. Lancet & Observer.*

ANALYSIS OF CRAB ORCHARD SALTS.

These salts constitute the residue when the waters of the Crab Orchard Springs are evaporated to dryness, and have gained, in the last few years, quite a reputation in the West as a medicine. They are, consequently, made on an extensive scale by various parties residing in the neighborhood of the source of the water.

Little, however, seems to be known of the efficacy as a medicine, or even of their existence, in the Atlantic States, judging from the unanswered inquiries which have appeared in some of the periodicals devoted to the spread of pharmaceutical knowledge.

Being near the spot, and having daily occasion to handle this late and popular saline aperient, enables us to speak advisedly of it, in reference to its source, mode of preparation, and the use it is put to.

Crab Orchard Springs are situated around the town of Crab Orchard, in Lincoln county, Kentucky, are quite numerous, and yield several varieties of mineral waters, the principal and most useful of which are the saline springs, yielding the salts.

These waters have been closely examined by Dr. Robt. Peter, the Chemist of the corps of Geological Surveyors of this State, whose analysis we give below:

"Sowder's Springs yields two hundred gallons of water a day. Specific gravity, 1.006.

One thousand grains of the water, evaporated to dryness at 212°, left 7.153 grains of saline matter, which was composed of the following salts:

	GRAINS.	
Carbonate of Lime . . .	0.506	held in solution by carbonic acid
" Magnesia . .	.375	
" Iron . . .	a trace	
Sulphate of Magnesia . . .	2.989	
" Lime . . .	1.566	
" Potassa . . .	.298	
" Soda . . .	.398	
Chloride Sodium . . .	1.000	
Silica . . .	.021	
Bromine . . .	a trace	
	7.153	

The amount of free carbonic acid was not estimated.

CRAB ORCHARD SALTS.

The salts left by the evaporation of the water of this spring, constitute a moist, granular powder, with a slight brownish tinge, scarcely distinguishable from Havana sugar in appearance. Per centage comparative as follows:

℞ Sulphate of Magnesia, . .	63.19
Sulphate of Soda, . .	4.20
Sulphate of Potassa, . .	1.80
Sulphate of Lime, . .	2.54
Chloride of Sodium, . .	4.77
Carbonates of Lime, Magnesia, Iron and Silica, . .	.89
Bromine, . .	a trace,
Water of Crystallization a loss, .	22.61
Total, ...	110.00

This salt was obtained by boiling down the water in an iron kettle to a certain density, and then, after allowing it to stand for some time in a wooden vessel, the clear liquid drawn off from the mixed deposit of carbonates lime, magnesia and oxide of iron, thrown down by boiling, was evaporated to full dryness.

Much of the Crab Orchard salt sold in Louisville has the ap-

pearance of New Orleans brown sugar, frequently mistaken for that substance by children, contains a considerable quantity of oxide of iron, and leaves a sediment of earthy carbonates, when dissolved in water, proving that it has not undergone the process of purification mentioned above. By some of the manufacturers much attention is paid to this process of purification of the salt, so that it is entirely freed from oxide of iron and the precipitated carbonates, and is perfectly white; but whether the removal of these ingredients of the water is not injurious to the full medicinal virtue of the saline matter may well be questioned. We should much prefer to let the iron remain in the salt.

Although the sulphate of magnesia is the principal ingredient of this saline mixture, the presence of the other saline matters, and of the carbonate of iron, modifies greatly the action of that well-known salt, so that the medicinal effects, from the use of the waters or their salts, are considerably different from that of a pure solution of sulphate of magnesia, and they are applicable to a greater variety of cases.

The medicinal virtues of these salts have been so highly appreciated of late, that many thousand pounds of them are annually prepared, and the demand in western drug stores and doctor's shops is greater for them than for the classic salts of Epsom. Physicians find these salts much less drastic, and more tonic, than pure unmixed Epsom salts, and more likely to act on the liver in the manner of calomel, when taken in small doses. They are especially efficacious in the treatment of headaches and other affections resulting from gastric disturbances. Several terrible cases of periodical headaches, with sick stomach and general derangement of the economy, which had resisted, for years, every other mode of treatment, were entirely and permanently cured by the use of these salts.

They are usually administered in one or three teaspoonful doses, thoroughly dissolved in a tumbler of water, and taken before breakfast. A very agreeable manner of taking this medicine, is to dissolve a dose in the smallest possible quantity of water, and fill up the tumbler from the jet of a soda fountain, and drink it while effervescing; or have your apothecary to prepare it in the form of bottled mineral water, each bottle containing a dose.—*Louisville Monthly Medical News, Feb.*, 1860.

THE SOAP-BARK OF SOUTH AMERICA.

By Professor S. Bleekrode, Delft, Holland.

Several months ago, a peculiar bark (*Quillaia saponaria*) was introduced into the European trade, and recommended to be employed instead of soap, for washing and cleaning printed goods, woollens and silks, and especially for the delicate colors of ladies' dresses, &c.

The soap-bark is externally black colored, but internally the liber consists of concentric layers of yellowish white. The bark is remarkable for its density, as it sinks in water. The cause of this is the great quantity of mineral substances which it contains; thus the internal layer yielded 13·935 per cent. of ash, dried at a low temperature, and 18·50 per cent. when dried at 100° C. The ash consists almost entirely of carbonate of lime, which forms 12·60 per cent. of the 13·935, and appears as small crystalline needles, isolated or in groups, in the cells of the liber, not only between its concentric rings, but in every part of it. These glitter in the sun, resembling, under the microscope, the arragonite form of the crystallized carbonate of lime.

Relative to the great amount of lime, it may be remarked that this mineral is generally characteristic of plants, in which mucilaginous or pectinic substances are found abundantly: thus the grains of the quince (*cydonia*) contain 10 per cent. of carbonate of lime, and are remarkable for their large quantity of jelly.

When the internal white layers of the bark are soaked and macerated in water, at the ordinary temperature, a clear solution, without any alkaline or acid reaction, is soon formed; this becomes slightly turbid by the action of the air. When shaken, a heavy scum is produced. The bark loses nearly 20 or 25 per cent. in the water. I have prepared an extract from four drachms in nearly one pint of water, and one part of this was sufficient to make, with sixty-eight times its weight of olive oil, a perfect cream-like emulsion, which does not become separated, even after several months. By mixing equal volumes of the bark extract and of oil, the same emulsion is formed without change of volume, but in a short time the oil is changed into a thick, pure, white, cream-like substance, swimming upon the

clear water. There is, however, no separation of the constituents of the oil, as is the case by the reaction of alkaline substances. Alcohol does separate the emulsion, the oil is restored, and a white granular substance subsides.

The extract mentioned, has the property of reducing gold from its chloride; the glass employed for the experiment will be beautifully gilded; the reduction is much accelerated by the influence of the direct rays of the sun. The same power of reduction is shown, by mixing the extract with the alkaline copper solution as prepared by Fahling for the quantitative sugar-proof; the reduction into the red oxide of copper immediately follows on the application of heat. That this reduction is not produced by the presence of a sugar-like substance or glucose, is demonstrated by the experiment of Boettger with the basic nitrate of bismuth, for when this is boiled with the extract of the bark it remains white, which does not happen when there is glucose present in the smallest quantity. The solution of mineral chameleon is immediately changed from green to light yellow.

I have observed that the mucilaginous extracts made with water at a low temperature, by macerating the roots of the marshmallow (*Althæa officinalis*,) of the comfrey (*symphytum*,) and of the grains of the quince, have not the same influence on chloride of gold. The extracts of these roots precipitate the gold, under the form of the purple of Cassius, only at a boiling temperature; the mucilage of the grains of quince, however, likewise at ordinary temperatures, produces a precipitate having the lustre of metallic gold. The reduction of the copper, as mentioned above, will not happen. These mucilages have likewise the property of forming emulsions, but weaker and not so lasting.

The extract of the soap-bark is colored a reddish brown by nitrate of silver, and ammonia forms a precipitate. When a proper proportion of nitrate of silver with ammonia is prepared, a silver lustre, like that of the silvering of glass, will be produced by heat.

Concentrated sulphuric and nitric acids produce, by boiling, a sediment in the form of white flocks; the white flocks produced by the reaction of sulphuric acid are colored brown by iodine.

The experiments with other chemical re-agents have not pro-

duced any characteristic result. The extract is not coagulated by boiling, nor precipitated by alcohol and ether. The cold prepared extract can be employed for washing, and deserves the name of "Vegetable Soap."

Indeed, long before the invention of our alkaline soaps, and even up to the present day, several roots and fruits were known by their capability of being employed as soap, and botanists have distinguished them by the name of *Saponaria* in their systems of classification. Pliny gave a description of the *Struthion*—our Shrubby Gypsophila (*Gypsophila Struthium, L.*) "It is astonishing," he says, "how woolens are bleached, and made supple by it—*Radicula lavandis lanis succum habet mirum quantum conferens candori mollitieique.*"—*L.* 19; *c.* 18.) Dioscorides mentions that the soap-wort (*Lychnis*, our *Saponaria*) is everywhere sold in the shops for scouring and cleaning dresses. Several of the family of the carophyllaceous plants (*Dianthus*, *Lychnis*, *Gypsophila*, *Silene*) are remarkable for this property in a greater or less degree. By recent chemical means there has been extracted from these roots a special substance, called *Saponine* or *Struthiine*, and to this, notwithstanding the very small quantity contained in the roots, the singular power is attributed of making emulsions, and of being used for soap, in washing. The soap-wort of the Levant (*Gypsophila*) is, to this day, employed in the East for washing and cleaning silks and shawls. It was generally used in the Mediterranean districts of France and Spain; the French called it *herbe aux foulons* (the fullers' plant.) The *Saponaire* or *Savonière* of the French, is the root of a kind of *Lychnis*.

The vegetable soap-principle, saponine, was found by Henry and Bourtron Charland, in the bark of the *Quillaia saponaria*. *Le Quillay* is a tree of the family of Rosaceous plants, a native of Huanuco, in Peru. Ferdinand Lebeuf made special mention of this bark in 1859 (*Comptes Rendus de l'Académie des Sciences à Paris*, xxxi., p. 652) for its richness in saponine, and recommended it for pharmaceutical use in preparing emulsions of oils, resins, balsams, and several other insoluble medicaments. He mentions likewise the bark of the *Yallhoy* (*Monnina polystachia.*)

From one bark, boiled with alcohol of 40° B. (or 0.828 sp.

gr.,) according to the method followed by Lebeuf, Rochleder, and Schwarz, the saponine was extracted. This substance is characterized by its lasting irritating smell, and by producing sneezing: in some cases a special aromatic flavor is perceived. It is remarkable how small a particle, a mere homœpathic dose, is sufficient to change a large quantity of oil into an emulsion. The saponine has likewise the power of reducing gold from its chloride.

The extract of the soap-bark, prepared as mentioned above, undergoes a spontaneous change, when exposed to the influence of the atmosphere for several weeks. The clear solution is then transformed into a colorless, thick, but transparent jelly, with a slight acid reaction. Its property of making emulsions is not the least diminished, but it has lost the power of reducing gold and copper as before, and the reaction on the mineral chameleon proceeds very slowly. In short to explain the change, it is sufficient to say, that by absorption of oxygen from the air, the substance extracted by water has been oxidised.

To conclude, it appears that the soap-bark retains two substances, saponine, and pectine, both soluble in cold water, and equally endowed with the faculty of making emulsions with oils and fatty substances. The large quantity of isolated pectine in the soap-bark is explained by the separation from the lime during vegetation. The spontaneous oxidation has transformed the pectine into the gelatinous acids, the pectosic acid and pectinic acid.

Several years ago, in 1832, M. Braconnot, in his inquiries as to the transformations of several vegetable substances into a new principle by the influence of concentrated nitric acid, remarked that he found the saponine in the bark of the *Chicot de Canada*, or *Gymnocladus Canadensis*, Lam. He says that it is possible to substitute this bark (and also its leaves) for the soap-wort of the Levant. This tree is 30 or 40 feet high, able to stand our winters, and easily cultivated. I have also another sample of a bark containing saponine and pectine, which, when combined, are excellent for washing purposes.

Besides this, a kind of soap-bark is mentioned in the proceedings of the Boston Society of Natural History for 1855 (see also the *Edinburgh New Philosophical Journal*, vol. li., p. 201,)

obtained from a tree called *Chelaria saponaria.* As there is no plant known by the name of *Chelaria saponaria,* I suppose that it is wrongly printed for the *Quillaia,* treated of in this paper. The soap-plants used for washing in California, and preferred by those who know their merits to the best kinds of soap, are the bulbs of *Phalangium pomaridianum.* In the above communication it is stated :—"All these contain considerable quantities of oleaginous and alkaline principles in their composition, on which their value depends." This opinion is altogether erroneous. None of the vegetables known as vegetable soaps contain oils and alkali ; their property is entirely derived from neutral substances as above described.

In Guiana, the bark and fruits of the soap-wood tree (*Sapindus saponaria,*) called by the natives *Hurawassa,* is employed in the place of soap, and it is said that the fruit will clean sixteen times more goods than the same weight of common soap. A kind of *sapindus* called *Rarak,* is used in the same manner, at the Moluccas, and at Java.

The study of vegetable substances for their application as neutral soaps, merits the attention of modern dyers and printers, and certainly they can be recommended for delicate colors which are liable to be injured by the alkaline soaps.—*London Pharm. Journ. March,* 1860, *from The Journal of the Society of Arts.*

THE PREPARATION OF AN AERATED CHALYBEATE WATER.

By M. Sarzeau.

When clean pieces of iron are placed in a solution of carbonic acid prepared at 50° Fahr., and under normal pressure, small bubbles of gas are seen to form, which increase in size and are slowly disengaged. If platinum is rolled round the pieces of iron, the phenomenon is more apparent, and the experiment quicker made. By leaving the iron in the liquid until no more bubbles are seen to form, we obtain a liquor with a marked inky flavor, and which has all the properties of a solution of a protosalt of iron. If the liquor be heated it is at first turbid, then becomes milky, afterwards ochry, and at last, when it boils, it

suddenly changes to a deep brown. On cooling it deposits a substance of the same color, which, separated by filtration, dried in the air, and dissolved in hydrochloric acid gives a mixture of the protochloride and perchloride of iron. If a magnet be brought in contact with the brown matter when dry, it is found to adhere, showing that by heating a solution of carbonate of iron magnetic oxide is formed.

The preparation of an aerated chalybeate water is very simple. We have only to place some clean pieces of iron in the upper vessel of one of the ordinary gazogenes, and set the apparatus in a cool place for 48 hours, by which time a liquid is obtained which only differs from the before-mentioned in the excess of carbonic acid which it contains. The taste is sensibly inky, but it is not at all disagreeable to drink.

Two experiments have been made to determine the amount of carbonate of iron in solution. In both cases a quantity of peroxide was found corresponding to rather more than half a grain of the protocarbonate in 100 grammes (3 oz. 1¼ drs. 13 grs.) of the water. The quantity of iron in the water may be increased or diminished by leaving the two in contact for longer or shorter periods.—*Jour. de Pharm., Jan.,* 1860, *and Chem. News, Feb. 25th,* 1860.

ON TANNATE OF BISMUTH.

By M. Cap.

Tannate of bismuth has been introduced in France as a remedy for obstinate diarrhœa. It is prepared by first precipitating the oxide of bismuth from a solution of 44 parts of the crystallized nitrate by means of an excess of strong caustic soda. The precipitate is collected on a cloth and carefully washed. It is then triturated in a mortar with 29 parts of pure tannin. The magma is then diluted with water, the whole is thrown on a cloth, washed and then dried either in the open air or in a slightly heated closet.

The salt has a yellowish appearance; it is insoluble and consequently almost tasteless; it is easily suspended in a mucilaginous vehicle, in syrup, or in glycerine; and can also be administered in the form of pills, or of an electuary.

Its composition when thoroughly dry represents:

Oxide of bismuth	53
Tannin	47
	100

The above mode of preparation is very simple and at the same time the most rational. Most of the insoluble tannates are obtained by double decomposition; but the salts of bismuth and especially the nitrate, are in great part decomposed by water, and to keep them in solution it is necessary to have a great excess of acid, which, in the present case, would prevent the precipitation of the tannate of bismuth. It is better then to effect the combination directly, by acting on one equivalent of oxide of bismuth with one equivalent of tannic acid. The tannic acid may be dissolved in alcohol, ether, or even water, and then the tannin obtained in a resiniform mass can be used, which is cheaper than that obtained in the usual form.

The tannate is administered in doses of 30 grains.—*Rep. de Ph. and Chem. News, Feb.* 25, 1860.

CRYSTALLIZED GUAIACUM RESIN.

Prof. Hlasiwetz has, after a long trial, found a way to change the greater part of guaiacum resin into crystals. He dissolves a pound of the resin in as much alcohol as will make a solution of the consistence of a thin syrup. This he strains through fine linen, and adds gradually, while still warm, half a pound of caustic potash in spirit, shaking them together. The whole is allowed to stand in a bottle about 24 hours. The magma obtained is then transferred to a strong linen cloth, and the fluid part carefully pressed out. The moist cake is washed with strong alcohol until the alcohol runs away but slightly colored. The mass is again pressed, then triturated with a small quantity of water, and afterwards heated in a dish until reduced to a uniform consistence. It is then transferred to a filter and washed with cold water until the salt is white, and the water runs away colorless. This potash salt (which is but slightly soluble in alcohol and water) may be obtained crystalline by dissolving it in a large quantity of dilute alcohol at the boiling

point. From such a solution, as it cools, crystalline flakes separate. By cooling it very slowly, larger crystals may be procured, which when dried have a pearly lustre. A second crystallization gives them a dazzling whiteness. From a solution of this salt in hot potash water, hydrochloric acid separates the resin. Immediately after the decomposition, the resin is fawn colored, soft, and sticky; it is washed with water, dissolved in alcohol, and the solution is allowed to evaporate spontaneously. By degrees it crystallizes completely. The crystals appear scaly, or are aggregated together, have a pearly lustre, and a slight but most agreeable smell like vanilla.

They dissolve in ether, warm acetic acid, and dilute potash ley, but are insoluble even in warm ammonia water. Sulphuric acid dissolves them, acquiring a purple color. Chloride of acetyl gives a substitution product, which may be obtained from an alcoholic solution in granular crystals.

It should be remarked that with this ingredient the blue reaction of tincture of guaiacum with oxidisable substances is not obtained.

From a mixture of the solution of the crystallised resin with a spirituous solution of soda, a soda salt is precipitated, which may be purified like the potash salt.—*Annal. der Chem. und Ph., and Chem. News, Feb.* 25, 1860.

ON PILULÆ.

By Mr. B. S. Proctor.

In my communication upon some of the Pharmacopœia preparations, printed in the *Pharmaceutical Journal* for July last, I suggested one or two alterations in our pilulæ.

Though you have since then had several contributions on the same subject from other sources, there is much yet to be done. I therefore now offer another mite towards its accomplishment. Some of my present suggestions are in direct opposition to some of those recently made, and my object in bringing them forward is not to supersede the recommendations of others, but to notice one or two considerations which appear to have escaped their notice, and to show the necessity of attending to the wants of all

classes rather than to be guided by the experience of one individual, or class of individuals.

The physician prescribes, or the College requires, certain active medicines to be made into a pill mass.

The problem of the Pharmaceutist is to give to the mass plasticity, freedom from liability to change, and ready solubility in the stomach, and to accomplish these with as little outlay of money and labor as may be.

The difficulty or impossibility of attaining perfection in these requisite qualities, makes it desirable that we should avoid the liability to change, and obtain the ready solubility in the stomach, by preparing only small quantities of the masses as they are wanted, and economy of time demands that the labor of going through the whole process of weighing, powdering, mixing, and beating be not required of us every time a little Pilula Galbani Composita is wanted. The means by which this is to be attained is evidently to have the ingredients mixed in powder, requiring only the addition of a definite quantity of water or other excipient to convert them into a mass of the requisite qualities.

That this change would be acceptable to many is shown by the frequent demand for Pulvis Pilulæ Colocynthidis Compositæ, Pulvis Pilulæ Rhei Compositæ, &c. Mr. Muskett objects to such preparations as powder of Plummer's pill, on the ground that mixed powders have a tendency to separate on standing; but such an objection, though in this case theoretically, or even practically true, will not apply to the Pharmacopœia pills as a class, any more than it will to Pulvis Jalapæ Compositus, Pulvis Confectionis Aromaticæ, &c., which preparations have never been considered objectionable in this respect.

It has been recommended to liquify the various ingredients with the aid of heat, water, &c., by which means a very perfect mixture is obtained, and the mass will better stand the scrutiny of a microscopic examination, *but this is a theoretical advantage not of practical importance;* at the same time it generally imparts great toughness, and tendency of the pills to fall out of shape; *these are practical disadvantages.* I have had very little experience in the melting process, but I anticipate that it would be a great convenience to makers of pill masses on the large scale, obtained at the cost of great inconvenience to those who

make only on the small scale, to those who use them in dispensing, and to those who swallow the pills.

Unfortunately, those who make pills, especially the wholesale makers, rarely have the opportunity of examining the condition of their workmanship after it has stood the test of a few weeks or months' keeping in the hands of the patient. The skilful dispenser who prides himself upon his accuracy and care, would often be ashamed of his work if he could see it a few weeks old.

A series of experiments which I tried some time since, though designed to yield information to be used in dispensing, elicited a few facts which may usefully aid our present purpose.

A variety of medicines were made into pills with treacle, soft soap, conserve of roses, and glycerine. After a few months' keeping, an examination showed that those prepared with glycerine had most effectually retained their soft condition.

A specimen of Pulvis Pilulæ Rhei Compositæ (prepared according to the London Pharmacopœia, but using powdered soap instead of soft soap, and omitting the treacle) made into a mass with glycerine was, while new, rather deficient in tenacity, but became tough on keeping for a few weeks, and retained its toughness for several months. A specimen of the same, made into a mass with treacle, was tough while new, but by keeping became crumbly.

Other medicines which have not adhesiveness in themselves may be made into a good mass with a mucilage of the following composition :—

Powdered Tragacanth ʒiij.
Glycerine, fʒix.
Mix and add Water, ʒiv.

Prof. Redwood, in his *Practical Pharmacy*, says "the indiscriminate use of tragacanth cannot be too strongly condemned;" he might have added that, if judiciously applied, there are few substances so generally useful for imparting tenacity, or overcoming the inconvenience of hygroscopic extracts, &c. For the former purpose its union with glycerine prevents it giving an undue hardness and insolubility, and for the latter purpose it is necessary only to use it in the smallest effectual proportion. Thus blue pills frequently have an inconvenient stickiness, which is effectually removed by the addition of twenty grains of pow-

dered tragacanth to one ounce of the mass, which small quantity does not impart an objectionable degree of hardness.

A great number of pills contain aloes as their basis, and it, together with some other gum-resins, possesses abundant adhesiveness, but is very deficient in retentiveness of shape, nor is it an easy matter to supply this deficiency with any of the ordinary excipients, unless used in very large proportion. Conserve of roses, tragacanth, &c., are very unsatisfactory. Soap and glycerine, or soap and treacle, answer very well if the soap is used in considerable quantity; but after numerous experiments I feel convinced that the most satisfactory method of managing this class of bodies is to add some ingredient of an insoluble and fibrous nature, which will form the framework of the pill; and, for this purpose, nothing is better than woody fibre in a fine state of division, such as is obtained by putting sawdust through a sieve 40×40 meshes to the inch. Six grains of this "Pulvis Ligni" with six minims of glycerine will form thirty-six grains of extract of aloes into a good workable mass, divisible into ten moderate sized pills, which retain their shape perfectly for six or eight months, and, though they become very tough, still yield to the warmth of the hand. I do not know any other excipient which will effect so much without making the pills inconveniently large. There will probably be a feeling with many against the use of so vulgar a material as sawdust; if so, it might be replaced by pure lignin, or in some cases by Pulvis Cinchonæ, &c.

Mr. Muskett objected to my suggestion of omitting the Extract of Gentian in Pilula Aloes Composita, on the ground that the gentian increases the action of the aloes, and refers to Dr. Paris's Pharmacologia as his authority on this point. Dr. Paris's remark that bitters have the property of increasing the action of senna, and other aperients deficient in bitterness, scarce appears to apply to such a medicine as aloes. If Mr. Muskett's view be correct, Pulvis Cinchonæ would answer the double purpose of improving the physical as well as augmenting the medicinal properties of this preparation.

If the requisite quantity of dry excipient, soap, lignin, or gum, were ascertained, and ordered to be rubbed with the medicinal ingredients of the pill, and then an ascertained quantity of the fluid excipient, glycerine, water, mucilage, or spirit, directed to

be added to the others, and the whole formed into a mass, I think it might be very safely left in the hands of the operator to choose for himself whether combination would be most conveniently effected by the use of the mortar or the water-bath.—*London Pharm. Journ. Feb.* 1860.

INTRODUCTION OF THE TEA PLANT INTO THE UNITED STATES.

A few years ago the United States Government was led to take measures for the introduction of the tea plant into the confederation, with a view to establishing, if possible, the preparation of tea in some of the States. The success that had attended Mr. Fortune's operation for the East India Company, having induced them to consult that gentleman, it was finally arranged that he should again proceed to the Celestial Empire, for the purpose of obtaining as abundant a supply of plants for the west as he had secured for the east. His mission has been attended with the most complete success. A minute of the United States Patent Office now before us, states that he was despatched in March, 1858, that he had obtained seeds enough to plant 100 acres, a large portion of which had arrived by the 20th June, 1859, and was flourishing in a propagating house, especially constructed at Washington for their reception. Applications for plants were even then made in such numbers, that it had become necessary to refer to Congress for instructions as to their disposal.

Mr. Fortune returned to England some time ago, and has favored us with the following interesting report upon the final result of his expedition:—

"It will be seen by the accompanying papers that the results of my expedition to China, for the Government of the United States, has been very satisfactory. In little more than one year about 50,000 tea plants, and many other vegetable productions useful in the arts, or of an ornamental character,* have been introduced to America from the tea countries of China.

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* For example: the Camphor and Tallow trees, Chusan Palm, green dye plant (Rhamnus), manure plants (Trifolium and Coronilla), Wax-insect tree (Fraxinus chinensis), Yang-mae (Myrica sp.), southern fruits, such as the Lee-chee, Longan, Wampee, &c. &c.

"This success was mainly owing to experience acquired during former visits to these countries. Arriving in China in the month of May, I spent the first few months in visiting numerous tea farms in different parts of the country, where I made arrangements with the natives for large supplies of seeds as soon as they ripened in the autumn. In October and November I repeated my visit to the same districts, and everywhere found supplies of seeds awaiting me. In former transactions with these tea growers, I had always treated them kindly and liberally, and I now found the advantage that resulted from such treatment. Seeds had been saved for me in all directions; I had only to pick them up and proceed onwards, and was thus enabled to get through a large amount of work in a short space of time. In December I reached the seaport of Shanghai, with the whole of my collections in excellent condition.

"Tea seeds will not retain their vitality long if kept out of the soil. In order to guard against all risk, a large number of Ward's cases had been previously prepared and filled with earth, and to these the seeds were immediately transferred. The first shipment was made in December, a few days after my arrival in Shanghai. Knowing that the vessels would probably arrive in America in the middle or end of March, I thought it likely the seeds would remain in the earth without vegetating during the voyage. Instead, therefore, of sowing the seeds near the surface in the usual manner, I mixed up large quantities with soil, and filled the case up with the mixture of earth and seeds. By this simple plan many thousands of seeds were carried to their destination, and when they arrived there were as sound as if they had been all the winter on a Chinese seed-bed. Of course it was necessary to unpack them immediately on arrival, and sow them thinly in other quarters. In the other cases which were shipped later, this mode of packing would not have been safe. The seeds were therefore sown thickly and covered with earth in the usual manner, and in this state might vegetate on the voyage without any risk whatever. In the one case the object was to get the seeds quickly to their destination without vegetating, for had this taken place the experiment would have been a failure; in the other they were placed in circumstances favorable for vegetation, and the only change likely to occur would be this, that in China

they were only seeds, while towards the end of the voyage or at its termination they would have changed into healthy young plants.

"The watering, closing the cases, shipping, and last, but not least, securing the good-will of captain and officers, were all important operations."

Not only has the tea plant been thus introduced to the Eastern States, but it has found its way also to the Western; and our friends on both the Atlantic and Pacific sides are with their usual energy setting about growing it.

But there still remains the question whether they can turn it to profitable account. That their climate will be found to suit in some of the vast regions of the West there can be no reasonable doubt. But merely growing tea plants will not make commercial tea. The difficulty lies in the preparation of it, an operation which, as conducted in China, demands an enormous quantity of labor—the article of which beyond all others the United States have the least to spare. But is it really necessary to prepare tea Chinese fashion ?—to chop it up into little balls and twist it into all sorts of queer shapes with all sorts of names, in order to give it its dietetical value ? Surely not. We have ourselves found out that the painted article called green tea is not very wholesome and by no means the better for the paint; and we quite anticipate that our United States friends will have even already projected some sort of machine that will produce good marketable tea without the assistance of human hands. This indeed, we know, is the opinion of Mr. Fortune himself.—*London. Pharm. Journ. from Gardeners' Chronicle.*

CHEMICAL EXAMINATION OF CHIMAPHILA UMBELLATA.

(Extracted from an Inaugural Essay.)

By Samuel Fairbank.

The cold infusion of the leaves, made by displacement is turbid, of a reddish-brown color, acid to litmus, and possesses the odor and taste of the leaves. Solution of tannic acid causes no change, but if the infusion be boiled it becomes nearly transparent. Neither corrosive chloride of mercury nor ferrocyanide of potassium disturb the infusion when cold; but upon being

boiled there is a whitish precipitate deposited, which being heated with potassa, gives no indication of the presence of nitrogen in the precipitate. I should infer from the above that albumen is not a constituent of the plant.

Tannic Acid.—The infusion is rendered *greenish-black* by the sesqui-salts of iron, which color is not dissipated by boiling. It is also precipitated by quinia and gelatin.

Starch.—The decoction yielded upon the addition of tincture of iodine the characteristic blue precipitate of *iodide of starch.*

Gum.—The infusion, deprived of its tannic acid by means of gelatin, filtered, and solution of subacetate of lead added, gave a white curdy precipitate. By first exhausting the leaves with alcohol, and then treating with water, a precipitate was produced, in the aqueous solution, by subacetate of lead.

Sugar.—An alcoholic extract, about the consistence of honey, was diluted with water and filtered. To a portion of the filtrate, in a test tube, was added a solution of sulphate of copper, and then caustic potassa in excess. It was carefully heated to ebullition and allowed to boil for a few minutes, when a reddish precipitate (Cu_2 O.) was deposited.

A test tube was filled with another portion of the solution, having been previously mixed with a few drops of yeast, and then inverted into a small evaporating dish, a little liquid being poured into the dish to prevent any escape from the test glass. It was then placed in a warm situation, where the temperature was about 85° F. The fermentation began almost immediately, and continued until the liquid was entirely displaced from the tube, showing the sugar to be in considerable quantity. The displaced liquid was found to possess a faint vinous odor, due to the alcohol formed.

The remaining liquid was evaporated with a view of obtaining crystals, but after evaporating until sufficiently concentrated, it solidified without showing any crystalline form. Repeated experiments were made to obtain the sugar in crystals, all of which, however, failed, the result being in all cases a semi-solid translucent, amorphous mass. I therefore, think that it is *uncrystallizable.*

Extractive.—A hot infusion, evaporated to the consistence of a soft extract, with the addition of water, when filtered, left upon

the filter a considerable amount of a brownish-black substance, which was tasteless, insoluble in water, but soluble in alcohol and in alkaline solutions.

Pectic Acid.—A portion of the leaves, after being first exhausted by water to deprive them of coloring matter, was displaced with a solution of carbonate of soda, when muriatic acid being added to the alkaline solution it threw down a gelatinous precipitate, which, after drying formed laminæ. These upon the addition of water swelled considerably but remained undissolved. It was, however, soluble in solution of potassa, from which it was again precipitated by muriatic acid.

Resin.—A tincture was made with alcohol 0.835 and evaporated to about the consistence of syrup, and then thrown into water, which precipitated a considerable amount of resinous matter. This was thrown upon a filter, and washed with water and then with ether. This resin is a brownish-black substance, which is inodorous, hard, brittle, and fusible. It is insoluble in water, in ether, and in the fixed and volatile oils; but dissolves quite freely in alcohol, and is saponified by solution of potassa.

Fatty Matter.—The leaves, first exhausted with alcohol, and then treated with ether and evaporated, left a small quantity of fatty matter. It communicated a greasy stain to paper, which was not dissipated by heat. It was soluble in the volatile and fixed oils.

Chlorophylle.—Chlorophylle was seperated by treating the ethereal extract with hydrochloric acid and precipitating the acid solution with water. The leaves also contain a *yellow coloring matter*, soluble in water and alcohol.

A tincture being made with diluted alcohol and agitated with chloroform, the mixture was set aside for some time until the liquids separated. The lighter solution was then drawn off, and the chloroformic liquid transferred to an evaporating dish and allowed to evaporate spontaneously, yielded a yellow crystalline substance. This was dissolved in alcohol, filtered, and allowed to evaporate spontaneously. By this means the crystals were rendered tolerably pure.

It was also obtained by simply distilling the *stems* with water. This substance, for which I propose the name of *Chimaphilin*, comes over and condenses in the neck of the retort, in

the form of beautiful needle shaped crystals of a golden yellow color.

The stems yield a much greater proportion of chimaphilin than the leaves, both by distillation with water and by the chloroform process. The quantity of the crystals is neither diminished nor their beauty impaired by distilling the stems with a solution of caustic potassa.

Chimaphilin is neither acid nor alkaline to test paper; it is therefore, a neutral substance, of a golden-yellow color, insipid, inodorous, crystallizable, fusible; volatilizing without change and crystallizing in acicular crystals. The crystals vary in length according to circumstances, some of them are as much as an inch and a half long. It is certainly one of the most beautiful crystalline substances in organic chemistry. The crystals obtained by distillation are permanent in the air, but those prepared by the chloroform process are not, owing probably, to their not being perfectly pure. The latter assume an olive hue, ultimately changing to a purple, on exposure to the atmosphere.

Chimaphilin is insoluble, or nearly so, in water; soluble in alcohol, ether, chloroform and in the fixed and volatile oils, concentrated nitric acid does not effect it; sulphuric acid carbonizes it; chlorhydric acid produces no change. Its solution is not precipitated by corrosive chloride of mercury nor by tannic acid; many other reagents were tried without producing any change whatsoever.

The *pungent* principle of the stems resides in a resin, which was separated by agitating a tincture of the stems made with diluted alcohol with ether; drawing off the ethereal solution by means of a pipette, and evaporating. As thus obtained, however, it contains a small quantity of tannic acid and chimaphilin. The tannic acid can be removed by washing the resin with cold water, and the chimaphilin by chloroform, the resin being insoluble in either of these menstrua. It produces at first a cooling sensation in the mouth, somewhat like that occasioned by oil of peppermint, but in a few minutes becoming excessively pungent. It is soluble in alcohol and ether, but is insoluble in chloroform and in the fixed and volatile oils.

Ashes.—The leaves, on incineration, yielded 5.24 per cent. of ashes.

In examining the ashes they were first edulcorated, and the residuum boiled with chlorhydric acid, which produced quite a brisk evolution of carbonic acid. To a portion of the aqueous solution, tartaric acid was added which on standing deposited a crystalline white precipitate. Solution of bichloride of platinum also produced a precipitate. Antimoniate of potassa a white precipitate. Nitrate of silver a white precipitate of chloride of silver, another portion of the ashes dissolved in water acidulated with nitric acid, also gave a precipitate with nitrate of silver. Chloride of barium a white precipitate, insoluble in nitric acid.

To a portion of the acid solution supersaturated with ammonia, acetic acid was added which produced a precipitate (phosphate of peroxide of iron.)

Ferrocyanide of potassium yielded a dark blue, and tincture of galls a bluish-black precipitate. Oxalate of ammonia a copious white precipitate. Lime is very abundant in the ashes. Ammonia was added to the acid solution until supersaturated, then a solution of phosphate of soda precipitated the magnesia as the double phosphate of magnesia and ammonia. It was entirely soluble in chloride of ammonium.

The constituents of Chimaphila Umbellata may be summed up as follows:

Organic matter	94.75.
Inorganic "	5.25.
	100.00.

Organic.—Tannic Acid, Gum, Starch, Sugar, Pectic Acid, Extractive, Resin, Fatty matter, Chimaphilin, Chlorophylle, Yellow coloring matter, Lignin.

Inorganic.—Potassa, Lime, Magnesia, Iron, Chloride of Sodium, Sulphuric acid, Phosphoric Acid, Silicic Acid.—*Jour. and Trans. Md. Col. Pharm. March*, 1860.

ON SYRUP OF SQUILL PREPARED WITH DILUTED ALCOHOL.

By J. S. Conrad.

It has long been a custom of physicians to prescribe syrup of squill with a carbonate, when the effect of the carbonate is

desirable: which cannot be done with our syrup prepared with acetic acid menstruum, without the loss of the acid gas. To the accomplishment of this end I have prepared a formula as follows:—

Take of Squill, (powdered,)	.	two ounces, troy.
Alcohol,	. . .	three fluid ounces.
Water,	. . .	one pint.
Refined Sugar,	. .	two pounds troy.

Mix the squill with twice its bulk of coarse washed sand, introduce into a percolator, and place a tin diaphragm on the top. Mix the alcohol and water, and displace till 12 ounces are obtained, add the sugar, boil, evaporate to two pints and strain. This syrup has all the virtues of the squill in the same proportions as that by the Pharmacopœia, and if well prepared presents the same appearance.—*Ibid.*

ON THE PREPARATION OF ECBALINE, (ELATERIN), THE ACTIVE PRINCIPLE OF ECBALIUM OFFICINARUM.

By John Williams.

The *Ecbalium officinarum* (*Momordica elaterium*), or squirting cucumber, appears to have been employed as a purgative from the time of Dioscorides and Pliny, or possibly much earlier: and the so-called extract is the form in which it has usually been administered.

This *extract* is, as is well known to pharmaceutists, produced by a process totally different from that employed for the production of an ordinary extract.

The cucumber is sliced longitudinally, and subjected afterwards to gentle pressure, the juice thus obtained being allowed to remain at rest for ten or twelve hours, by which time a greenish feculent matter will have deposited. The clear supernatant liquor being rejected, the deposited matter is drained on a linen cloth, and afterwards dried at a very gentle heat, and thus we obtain the thin flaky pieces met with in commerce. As may be supposed, this extract is liable to very great discrepancies in strength and quality; for if the pressure used is great, a large percentage of inert matter will be expelled from the cucumbers, and thus the activity of the medicine will be reduced to an important extent.

The quantity of fine extract of elaterium which can be obtained is stated* to be about 3 drs. from one bushel of the fruit, weighing in the fresh state 40 lbs. Other authorities give quantities varying from 2 drs. to 4 drs., or even more, doubtless dependent upon the amount of pressure and washing the cucumbers were submitted to, and also the length of time the fluid was allowed to stand before the deposited matter was separated.

The activity of the extract of elaterium depends upon a white crystallizable body to which the name *elaterin* was formerly given, but for which the title *ecbaline* is proposed to be substituted. Pereira points out that the quantity of this principle contained in various samples of the extract of commerce varied from 44 per cent. to 33, 26, 15, and in a foreign article it may be found as low as 5 or 6 per cent. From an experiment of his own upon some extract very carefully prepared at Apothecaries' Hall, he concluded that 30 grs. yielded 7·5 grs. or 25 per cent.; and in a trial I have just made, 3 drs. of extract, purchased as the finest commercial article (taken as being probably equivalent to 1 bushel or 40 lbs. of the wild cucumbers), yielded me exactly 36 grs. of white crystallized ecbaline, equivalent to only 20 per cent.

Of course discrepancies like those are much to be deplored in medical practice, and if the active principle only was used in medicine, much greater certainty of effect would doubtless attend the administration of the remedy. The objection to the use of the ecbaline, however, has hitherto been the high cost of producing the article, thus rendering it almost impossible to employ the remedy in any but experimental trials. With a view of removing the obstacle, Dr. R. B. Garrod, one of the committee at present engaged in drawing up the new British Pharmacopœia, suggested that probably other portions of the fruit as well as the juice would, if properly treated, yield a large quantity of the active principle, and proposed to Messrs. Savory and Sons, and afterwards to our firm, that we should experimentally test the feasibility of his process. Upon consulting together, it was determined that the operations should be conducted in our laboratory, and I have now the pleasure of laying the results of our inquiries before the profession.

* Pharmaceutical Journal, vol. i. New Series, p. 325.

Dr. Garrod's proposed process for the production of the ecbaline was as follows:—The cucumbers are to be sliced and dried at a gentle heat, but so that no loss of juice shall occur. The dried fruits to be treated with alcohol, and the alcoholic extract thus obtained acted upon with solution of potash, in which the starch, green coloring matter, &c., is soluble, but in which the ecbaline is not only insoluble, but remains perfectly unaffected by the powerful reagent employed. The residuum, therefore, dissolved in alcohol and crystallized, will of course give the ecbaline in a state easily rendered quite pure by a subsequent solution in alcohol, digestion with animal charcoal, and re-crystallization.

It appeared reasonable that by this process *all* the ecbaline contained in the cucumbers would be extracted, whereas by the ordinary process of making the extract, it may be supposed some, or even a large quantity of active principle, may be left in the plant.

One bushel (weighing 40 lbs. in the fresh state) of wild cucumbers were acted upon. They were carefully sliced longitudinally upon an inclined slab, so that any juice yielded during the operation would flow into a vessel placed for its reception. The cut cucumbers were then placed on a sieve for 12 hours (but were not pressed in any way), and then placed in earthen pans, in a warm closet, where in the space of 4 days they became completely dry. In this state they weighed 3 lbs. 5 oz. The liquor which had drained from the cucumbers during the cutting and draining was evaporated to dryness by itself at a gentle heat, and yielded 3 oz. extract: this we will call extract No. 1.

The dried cucumbers were now placed in a digesting apparatus, with 2 gallons of alcohol, and the temperature was raised to the boiling point. Afterwards they were allowed to digest for 24 hours. Then the tincture was drained and the operation repeated with another 2 gallons of alcohol. The mixed tinctures when filtered, presented a bright green color, and being placed in a still the alcohol was drawn over. A small quantity of green extract was the result: this extract we will call No. 2.

The extract No. 1 (the evaporated juice) was treated with successive portions of boiling alcohol, until nothing more could be extracted; the filtered tinctures, evaporated to dryness, gave

a small quantity of greenish extract. This greenish extract was then treated with about 8 times its bulk of hot liquor potassa. After digesting for a short time, the greater portion of the matter dissolved, leaving, however, when filtered, washed, and dried, 30 grains of nearly white crystalline matter, which proved to be the ecbaline we were in search of.

Extract No. 1 was treated in like manner, and yielded 57 grains of matter, insoluble in liquor potassa, but of a dark greenish-brown color. Both these deposits were then dissolved in boiling alcohol, a very small quantity of pure animal charcoal added, filtered, and allowed to crystallize.

The matter from extract No. 1 yielded 28½ grs. of ecbaline, white and crystallized. The matter, however, from No. 2 extract refused to yield crystals, and gave only a dark colored fatty mass, which after another trial at crystallization yielded no better result. It was then attempted to dissolve the fatty matter from any ecbaline which might be present by means of a small quantity of cold ether, but no good effect was produced, the whole mass dissolving freely in that menstruum, whereas ecbaline is but slightly soluble in it.

The result of the experiment appeared so unsatisfactory and so different from what was anticipated, that I determined to repeat the experiment, though in a rather different manner.

One bushel of wild cucumbers was again taken. They were cut up with the same precautions as before, catching all the juice carefully; then well bruised in a large mortar, the mass placed upon sieves and allowed to drain. They were then stirred up with about their own bulk of cold water, allowed to drain, and then subjected to strong pressure through very coarse canvas. By this means a considerable amount of juice was obtained, which upon standing separated into three portions—an insoluble green deposit (the extract of elaterium), and a large quantity of coagulated chlorophyll, floating in a clear aqueous liquid. The whole was thrown upon a calico filter, and the solid matter, after being well drained from the liquid portions, dried between chalk stones. When dry it weighed 2½ oz. The aqueous portion was evaporated to the consistence of an extract.

The mass of the cucumbers, after the juice had been thus pressed out, was dried as in the first experiment, digested in

boiling alcohol twice, and the mixed tinctures strained and distilled. The amount of extract yielded, was, as might be expected, much smaller in quantity than on the previous occasion.

First, the solid matter which had been strained from the juice (which I look upon as equivalent to the ordinary extract of elaterium, though not in so pure or concentrated a form) was treated with successive portions of boiling alcohol until nothing more would dissolve, and the mixed tinctures evaporated to dryness. This we will call extract No. 1.

Then the extract produced by evaporating the aqueous liquor was treated with alcohol, and yielded a small quantity of brown extract, which we will call No. 2.

The thin alcoholic solution of the cucumber-mass, upon standing, separated into two portions. The more liquid portion was evaporated by itself to dryness: this constitutes No. 3; the solid portion of the alcoholic extract of the mass No. 4.

The several extracts were then treated with hot liq. potassæ, and allowed to digest for some hours, then, somewhat diluted, were filtered, washed and dried.

The dried precipitates were treated with boiling alcohol and filtered, and the alcohol, allowed to evaporate, gave the following results:

No. 1 extract yielded nearly 25 grains of nearly white crystallized ecbaline;

No. 2, 38 grs. of a dark brown non-crystallizing mass, which appeared to possess none of the properties of ecbaline;

No. 3 yielded 10 grains of a much lighter and crystalline mass, which probably by future purification will yield a few grains of ecbaline;

No. 4 yielded 14 grains of green waxy matter.

The chlorophyll and residual matter which had refused to dissolve in the boiling alcohol to form extract No. 1, was treated with liq. potassæ, by which means a large portion was dissolved, and that which remained behind was again boiled in alcohol; but the result was only a few grains of brown extractive matter quite free from ecbaline.

The conclusion which must be drawn from these experiments is, I think, that the mass of the cucumber after separation of

the juice contains so small a quantity of ecbaline that the loss of alcohol and working expenses would not be covered by the value of the substance produced: that the only portion which yields ecbaline is the insoluble deposit from the juice, which we already know under the name of extract of elaterium, this substance yielding the ecbaline with ease: and that the aqueous portion of the juice is perfectly worthless for the purpose.

Thus we find that the quantity of ecbaline yielded by the large bulk of one bushel of cucumbers is only at most 30 grains, and as the labor and expense attendant upon the operation is considerable, it must be evident that the substance must remain a very expensive one to manufacture; and I am inclined to think it very probable that ecbaline can be made (at any rate in London) at a cheaper rate from ext. elaterium itself than direct from the cucumbers.

I may add in conclusion that through Messrs. Savory and Sons I have been able to operate upon some German extract of elaterium. This extract is in appearance similar to ordinary extract of henbane, or liquorice, and is evidently obtained from the plant itself, and was sold as low as 10*s.* 6*d.* per lb. It was imagined that this extract might be a cheap source for the production of the ecbaline. One ounce of it was digested with boiling alcohol and the alcoholic extract prepared, which was then treated with the solution of caustic potash in the same manner as the other extract; but I have been unable to obtain even the slightest trace of crystalline matter from it. It would be interesting to know whether the extract itself has *any* cathartic action.—*Chemical News*, *London Feb.* 1860.

RESEARCHES ON SOME ORGANIC ACIDS.

By Professor J. Liebig.

Pelouze reported to the French Academy, the discovery of the artificial formation of tartaric acid, by Liebig, (see page 86 of this volume,) when Biot suggested that the optical behaviour of this artificial acid might be investigated by certain experiments, which have now been performed by Dr. Bohn, of Munich. The result was, that Liebig's acid deviated the

polarized light to the right, and that this deviation is increased by a trace of boracic acid; therefore the identity of it with the natural acid is also established by the optical properties.

Liebig's discovery may throw some light on certain organic processes within the vegetable cells. Unripe grapes contain tartaric acid, which gradually disappears, giving place to sugar, a carbohydrate in the ripe grapes, and inasmuch as by oxidation of carbohydrates tartaric acid may be produced, we may assume, that by the reverse process, the plant may transform tartaric acid into sugar. In compliance with the elementary composition of tartaric acid, it may, according to Liebig, be viewed as oxalic acid, one half of which has been transformed into, or which is copulated with a carbohydrate. Similar relations are doubtless existing between malic and citric acid, and the non-azotized products, starch, pectin, &c., which occur with these acids in the same plants.

Late experiments performed in Liebig's laboratory, have led to the unlooked for results, that by a simple oxidation, namely, on heating with black oxide of manganese, malic acid will yield aldehyde and citric acid, aceton. Malic acid may be considered as oxalic acid copulated with aldehyde: $2\ C_4\ H_2\ O_4 = 2\ C_2\ O_3 + C_4\ H_4\ O_2$, and pyrocitric acid, which is generated by the influence of heat upon citric acid, as oxalic acid copulated with aceton: $C_5\ H_3\ O_4 = C_2\ O_3 + C_3\ H_3\ O$.

Further investigations in this direction will no doubt throw some light on physiological processes, hitherto not understood.—*Buchner's N. Rep.* viii. 515, 516. J. M. M.

ON THE OIL OF CAMPHOR.

By M. Lallemand.

Some years ago M. Biot submitted to M. Lallemand two vegetable products for examination. The first was the oil of the *Dryobalanops Camphora* collected by the well known Dutch savant, Dr. Junguhn, whilst jurneying in the north-west of the island of Sumatra. The second, already known as *oil of camphor*, had been extracted from the *Laurus Camphora*, a plant which also furnishes the camphor of Japan. "The results at

which I have arrived," says M. Lallemand, "differ with those already mentioned in works on chemistry, and render very probable the fact that the product analysed by M. Pelouze under the name of *essence of Borneo* had not been extracted from the *Dryobalanops Camphora* (the largest tree of the Indian Archipelago)." The researches contained in the author's paper show that the oil of Dryobalanops is a complex mixture analogous to the turpentine obtained from pines and firs. Its origin would make us suppose that it contained Borneo camphor: M. Lallemand assures us, however, that it does not contain a trace. The oil which exudes from the tree by incision does not differ from that obtained by decoction; they have both the same rotatory power and the same viscosity. The quantity experimented upon was too small to permit of further research. The camphor oil extracted from *Laurus Camphora* has already been analysed by Martius and Richer, who looked upon it as a first degree of oxidation of camphor, and represented it by the formula $C_{20}H_{16}O$. Gerhardt supposed it to be a mixture of camphor and a hydrocarbon, and M. Lallemand confirms this view.

"I have also determined," says the latter author, "the composition of some of the most abundant essences of the *Labiatæ* family, which I possessed in a pure state. The essential oil of *rosemary*, of *common lavender* (*Lavandula spica*) and *cultivated lavender*, consist of mixtures analogous to oil of camphor, and show us to what extent the molecule $C_{20}H_{16}$ and its immediate derivatives are distributed throughout the vegetable world.—*Chem News, Jan.* 14, 1860 from *Rep. de Pharm.*, *Oct.*, 1859.

ARABIAN MANNA.

Dr. Landerer, pharmaceutist to the King of Greece, and Prof. of Chemistry in the University of Athens, publishes the following notice of this article. The Arabians call the root of *Cyperus Esculentus* Manna. It is one of the most useful plants to them as food, side-dish and dessert, thanks to its pleasant almond taste. In case of sickness, they make a pleasant-tasting sherbet of this root, preferable to the best milk of almonds, and the syrup, prepared from an emulsion of the *Cyperus*, will

keep longer than that from almonds. The different varieties of Sherbet, sold in the streets of Alexandria and Cairo, resembling milk of almonds, are prepared from this manna. Hundreds of quintals of it are brought from the interior of Africa to the bazaars of Cairo, Smyrna, Magnesia, Constantinople, and especially Alexandria, whence it comes to Greece during the autumnal months. A wine glass full sells at from 10 to 15 lepta. They do not sell it, like other fruit, by weight, but by measure, for which a glass is always used. The racinés, which are called ground· almonds, contain much oil that can be extracted by roasting; it is a fixed oil of a very pleasant taste, and very similar to that of almonds and sesame. It is separated on a large scale in Egypt, where it is employed for a variety of purposes, although it becomes rancid very quickly. The plant, so useful, is multiplied by tubercles, and prospers, particularly in sandy soils, to such an extent that large plains are entirely covered by it. The sand is separated from the tubers by means of a sieve; bags made of camel's hide are filled with them, and they are carried by camels in the caravan to Cairo, where they are dried and placed in the warehouses devoted to this business. The poorer class, after roasting them, use them to prepare a very pleasant coffee, which, whether pure or with milk, is possessed of more nutritive properties than ordinary coffee. In consequence of its tuberculous form, the racine was called by Dioscorides *Olokonitis*, and Pliny designates it by the name *Anthalium*.—L. H. S. *Journ. Md. Col. Pharm., March*, 1860.

OXYSULPHURET OF ANTIMONY.

M. Jacobi has made known in France the art of preparing and preserving oxysulphuret of antimony according to the Prussian Pharmacopœia, which gives a receipt for a very fine product.

1500 parts of ordinary carbonate of soda are dissolved in 7500 parts of water; and to this solution are added 500 parts of lime, rendered semi-liquid by the addition of 1500 parts of water; to this mixture 100 parts of black sulphuret of antimony are added together with 125 parts of sulphur. The whole is boiled for an hour and a half, water being added now and then to replace that

which is evaporated. The residue is again boiled with 3000 parts of water, the solution is then filtered and the filter washed with warm water. The liquid is allowed to rest, and the crystals obtained washed with distilled water, to which $\frac{1}{100}$ of potash is added; they are then dried. 500 parts of these crystals are dissolved in 2500 parts of water, the solution filtered and diluted with 12,500 parts of water. To this is added a mixture of 150 parts of sulphuric acid with 4000 parts of water. The precipitate formed is collected on a filter, washed first with ordinary water, then with distilled water, pressed between folds of blotting paper, dried at a temperature of 77° Fahrenheit, reduced to powder and preserved in a black bottle removed from the light. The drying at a low temperature, and the washing with distilled water, are two important conditions whereby the preservation of the product is assured.—*Chem. News*, *Dec.* 31, 1859, from *Jour. de Ph. Nov.*, 1859.

SYNTHESIS OF OXYGENATED BASES—ARTIFICIAL ALKALOIDS

M. Wurtz has shown recently that oxide of ethylen can be united directly with water, and form monoethylenic alcohol (glycol), diethylenic and triethylenic alcohol, according as these combinations take place between 1, 2, or 3 atoms of oxide of ethylen and 1 atom of water.

The same author now makes known that oxide of ethylen will unite with ammonia without elimination of water; that is, all the elements of oxide of ethylen combine with all the elements of ammonia and form oxygenated bases remarkable for their energetic properties. To prepare them, oxide of ethylen is added to a concentrated solution of ammonia, and the mixture left to itself. If care be not taken the whole explodes with a powerful detonation, for the reaction produces much heat. When the experiment is conducted properly a syrupy alkaline matter is obtained. This is neutralized with hydrochloric acid, and the solution, sufficiently evaporated, produces colorless rhombohedric crystals which contain

$$C_6H_{15}NO_3, \text{ HCl.*}$$

A solution of these crystals forms a double salt with chloride of platinum. The supernatant liquid, from which the crystals in

*C 12,=H=1, N=14, O=16.

question have been deposited, contains another chloride, which cannot be crystallized, but which gives also a double salt with chloride of platinum.

The first platinum salt contains the elements of 1 atom of ammonia and 3 atoms of oxide of ethylen; the second platinum salt contains the elements of 1 atom of ammonia and 2 atoms of oxide of ethylen.

We have therefore two new oxygenated bases:

$$\text{1st. } \underbrace{2C_2H_4O}_{\text{Oxide of ethylen.}}+NH_3=C_4H_{11}NO_2$$

$$\text{2nd. } 3C_2H_4O+NH_3=C_6H_{15}NO_3$$

which in the state of chlorides combine with chloride of platinum, as chloride of ammonium, of potassium, &c. do. There seems to be no reason why compound ammonias should not react in the same manner; and the above furnishes us, doubtless, with reactions which will become a fertile source of artificial oxygenated alkaloids; moreover, they seem to confirm an idea conceived by Berzelius, that alkaloids contain ammonia already formed.—*Chem. News*, *Dec.* 31, 1859 from *Comp. Rend.*, *Dec.* 5, 1859.

ALCOHOL IN THE ANIMAL ORGANISM.

It is usually supposed that the alcohol which enters into the circulation, through the digestive organs, is rapidly destroyed under the influence of the oxygen by the respiratory process. This oxidation may indirectly produce in the blood, carbonic acid and water, or according to the general view, it suffers a series of changes into compounds more oxygenated than before; aldehyde, acetic acid, oxalic acid, carbonic acid. The amylaceous, and saccharine and fatty bodies suffer a similar decomposition; and brandy, beer, cider and the spirituous liquors in general, would therefore be related to the supporters of respiration.

This theory, founded upon experiments which appear to be incontrovertible, explains in a satisfactory manner, why no alcohol, or only traces are discovered in the blood and urine.

The results of experiments which have lately been reported to the Paris Academy, by M. Duroy, Lallemand and Perrin, are in most cases at variance with this theory; they prove, on the

one hand, that alcohol is not destroyed in the blood because it is met with in all liquids and tissues, which do not contain its products of oxidation, and on the other hand, that it is secreted in various ways by the lungs, the skin, and particularly the kidneys.

The following are the conclusions at which they arrive :

1. Alcohol merely acts upon the nervous system; it is no supporter of respiration.
2. Alcohol is neither destroyed nor altered in the body.
3. Alcohol concentrates chiefly in the liver and brain.
4. These facts explain the pathology of certain organic and functional mutations of the liver, brain and kidneys.—*Gaz. Med. de Paris*, 1859, *No.* 46. *Buchner's N. Repert.* viii. 518, 519.

J. M. M.

ON THE AMOUNT OF CANTHARIDIN CONTAINED IN DIFFERENT PARTS OF THE BODY OF THE CANTHARIS VESICATORIA.

By M. Ferrer.

Various opinions have been expressed on the question whether the cantharidin is equally distributed all through the body of the insect, or whether it exists only in certain parts to the exclusion of the others. Pliny, Galen, and Aetius believed that the elytra had no action. Hippocrates recommended that the head with its antennæ, the elytra, the membranous wings, and legs should be rejected, as he considered them completely inert. This opinion was adopted by Schwilgué in the third edition of his *Materia Medica*, which appeared in 1818. Latreille, Cloquet, and Audoin, on the contrary, assert that all parts of the body contain cantharidin.

In 1826, M. Farines, a pharmacien at Perpignan, having tried, without effect, plasters prepared separately with the powder of the elytra, wings, antennæ, and legs, returned to the opinion of Hippocrates, and in a note addressed to the Société de Pharmacie of Paris laid down the follwing conclusions :—

1. That the active part resided only in the soft organs.
2. That the hard organs do not possess any vesicating power.

In 1855, M. Courbon, in a memoir presented to the Academy, also said that the vesicating principle of cantharides resided only in the soft or internal parts; but in opposition to M. Farines

he contended that the soft parts of all regions possessed a vesicating property; that the soft or internal parts of the legs and head are as active as those of the thorax and abdomen, and that the only parts of the body completely inert are the elytra, the antennæ, and the portions of the feet composed only of hard parts.

In 1856, M. Berthoud sought chemically for cantharidin: 1, in the abdomen and thorax, which he designated the *soft parts* of the flies; and 2, in the elytra, wings, antennæ, and feet, which he called the horny parts:

250 grammes of the abdomen and thorax gave 0·45 of cantharidin.

125 grammes of the horny parts gave 0·053.

These results, completely opposed to the conclusions of M. Farines, do not, however, demonstrate the existence of cantharidin in every part of the body of the fly. They only serve to confirm the opinion and the observations of M. Courbon. The parts which M. Berthoud has named collectively the horny parts, and from which he has extracted the cantharidin, contain in their interior a certain quantity of soft parts (the soft parts of the head and legs) and the cantharidin might be obtained exclusively from these soft parts if the observations of M. Courbon were strictly true.

On a question so interesting and as it appeared to me so imperfectly resolved, I thought it would be useful to make some new researches. To ascertain whether cantharidin is indifferently distributed over every part of the body, or whether it is only contained in particular parts, I have sought for it,—1, in the feet and legs; 2, in the head; 3, in the elytra and wings; and 4, in the thorax and abdomen.

First experiment:—11 grammes of the feet and legs were powdered and treated in a displacement apparatus with 25 grammes of chloroform; after macerating for three days the liquid was run off and the chloroform displaced by means of alcohol. The chloroform so obtained was allowed to evaporate in the air, and the residue was placed between folds of blotting paper to absorb the oil. The crystals left were redissolved in a small quantity of chloroform, again crystallized and then weighed. From the 11 grammes of the feet, 0·01 of cantharidin was obtained, still stained with a little of the green oil.

Second experiment :—17 grammes of the head and antennæ (there were very few antennæ) were treated with 35 grammes of chloroform, like the preceding, and from them 0·015 of cantharidin was obtained.

Third experiment :—11 grammes of the elytra and membranous wings were treated with 25 grammes of chloroform, and yielded 0·009 of cantharidin.

Fourth experiment :—30 grammes of the thorax and abdomen were mixed in a displacement apparatus with 70 grammes of chloroform. In this experiment the residue obtained by the spontaneous evaporation of the chloroform, furnished a large quantity of crystals. After having absorbed the oil and redissolved the crystals in a small quantity of chloroform, I threw the solution on a filter. After filtration I opened the paper and found it covered with small micaceous crystals of cantharidin perfectly white. The chloroform had deposited the crystals as it evaporated, and the green oil had passed through with the chloroform which had not evaporated. As this last portion might still contain a small quantity of cantharidin, I evaporated and again dissolved it in a little chloroform, and threw it on a filter as before. After repeating this a third time I obtained all the cantharidin furnished by the 30 grammes of the thorax and abdomen perfectly white. It weighed 0·072 grammes.

The blisters produced on my arm by a very small quantity of the crystals obtained in my experiments, left no doubt of their nature. From these experiments the author draws the conclusion that the active principle of cantharides is found distributed over all parts of the body.—*Chem. News*, Jan. 21,* from *Rep. de Pharm.*

ON THE PREPARATION OF THE UNGUENTUM HYDRARGYRI NITRATIS, (PH. L.)

By Julius Schweitzer.

No preparation of the London Pharmacopœia is more difficult to obtain of a constant and uniform appearance and consistence

*Dr. Leidy (see page 157 of this volume) shows that cantharidin exists in the blood of the insect and in certain organs near the generative organs.—Ed. Am. Jour. Pharm.

than the unguentum hydrargyri nitratis. The ingredients which enter into the composition of this ointment are lard, olive oil, mercury, and nitric acid; and it is directed to be prepared by first dissolving the mercury in the nitric acid, and then mixing the solution while hot with the lard and olive oil previously melted together. When successfully made the ointment should be, 1, of a pure pale yellow color; 2, of a soft and uniform consistence; and 3, should be able to retain its color and softness unchanged. When the acid mercurial solution is mixed with the melted lard and oil, we observe a chemical action accompanied by a rise of temperature to take place, which is more or less observable according—1, to the state of the mercurial solution; 2, to the temperature of the lard and oil at the time the solution is added; and 3, to the amount of stirring employed to effect the combination. The chemical action arises from the influence of the nitrous acid in the mercurial solution on the lard and oil. The warmer the fats, the richer the nitric solution in lower oxides of nitrogen, and the more energetic the stirring, the more sudden will the chemical action take place, and the higher will rise the temperature of the mixture; and on the contrary, the cooler the fats, the poorer the mercurial solution in nitrous acid, and without stirring, the mixture occasions scarcely any chemical action and rise of temperature at all. As a sudden and high temperature is always detrimental to the ointment, we must especially guard against this, which is perfectly in our power. But as we have to assist, and to some extent develope, chemical action to produce the ointment, we must remember, 1, that the *larger* the amount of nitrous acid in the solution the *lower* must be the temperature of the fats when the mixture is made; and 2, that the *poorer* in nitrous acid the *higher* may the temperature of the fats be. It must always be borne in mind, however, that ointments whose temperature in the making rises above 212° Fahr. will turn out dark in color and hard in consistence, even if the color and consistence is tolerably good when first made; but those which are made at a lower temperature will always prove unobjectionable in every respect.

I divide the preparation of this ointment into three periods. I allow the solution of the mercury in the nitric acid to go on

slowly during the night. The next morning I melt the lard, and after the acid solution is added I watch the chemical action during the day. The following morning the preparation is finished in the manner hereafter described.

As the nitrous acid is the most essential agent in the formation of the ointment, I effect the solution of the mercury so as to lose as little of this acid as possible. I therefore allow the solution of the mercury to go on spontaneously in the cold and in a tall covered jar. I avoid hereby trouble and inconvenience; and in the morning I find a complete solution, cold and ready for use. In the morning I melt the lard on a water bath, strain it into an open glazed pan, and add the oil to it cold to lower the temperature. I stir the two well together, and wait until the mixture is about 130° Fahr., when I pour the mercurial solution gently into it, and allow the whole to stand undisturbed for some time. When the ointment begins to set at the sides of the vessel, and on the surface, I move these solid portions gently, and guide them into the warmer part, and wait again until it is necessary to repeat this operation, now and then drawing the spatula backwards and forwards through the entire mass. As the whole becomes firmer and firmer, I increase the stirring, and continue it at intervals through the whole day. The next morning I find a spongy mass with a high raised crust, rather harder than the interior portion, and generally a small quantity of acid liquid at the bottom of the pan. I now stir and beat the mass vigorously for some time until the spongy ointment softens under the spatula, and the liquid becomes thoroughly mixed, when the color becomes of a beautiful canary yellow, and my care and trouble are rewarded with an ointment everything that can be desired in appearance and consistence. I have still to add a few words on the ingredients and materials which concern this ointment. First of all I select the finest and best lard, as the goodness of the ointment, its color and keeping properties, depend a good deal on the quality of this article. Next, I avoid the use of all materials which are likely to be acted on by the acid solution. Even the wooden spatula of the laboratory I suspiciously discard for one of stone ware; and when I have my lard and oil, mercury and nitric acid in proper condition, my last look is to see that my vessels are really perfectly clean.—*Chem. News, Feb.* 11, 1860.

Varieties.

Waterproof Varnishes.—Take one pound of flowers of sulphur and one gallon of linseed oil, and boil them together until they are thoroughly combined. This forms a good varnish for waterproof textile fabrics. Another is made with 4 lbs. oxyd of lead, 2 lbs. of lampblack, 5 oz. of sulphur and 10 lbs. of India-rubber, dissolved in turpentine. These substances, in such proportions, are boiled together until they are thoroughly combined. A patent has been secured for the application of such varnishes to waterproof fabrics, by N. S. Doge, of London. Coloring matters may be mixed with them. Twilled cotton may be rendered waterproof by the application of the oil sulphur varnish. It should be applied at two or three different times, and dried after each operation.—*American Druggists' Circular, April,* 1860.

Protecting Young Trees with Blood.—With regard to the protection of young trees against the attacks of rabbits, mice, and other animals obnoxious to the vitality of vegetation, a Missourian correspondent (Dr. J. Dinkley) says:—"I will give you a much better remedy than any previously proposed. Rub the trees, from the ground upward to about 18 inches, with a piece of raw, bloody meat—liver is the most convenient thing; or blood may be put on with a brush. If this be done late in the fall or beginning of winter, no animal will touch the bark during that season. I have tried this plan for *thirty years*, and have never known it fail. Let horticulturists try it."—*Ibid.*

Colored Flames.—Bibulous paper soaked for ten minutes in a mixture of 4 parts by measure of oil of vitriol with 5 parts of strong fuming nitric acid, and then washed out thoroughly with warm distilled water, is to be dried at a gentle heat. The gunpaper thus prepared is then saturated with chlorate of strontium, with chlorate of barium, or with nitrate of potassium, by immersion in a warm solution of these salts; a solution of chlorate of copper also may be used. If, after complete drying, a small pellet of any of these papers be made, lighted at one point at a flame, and then thrown into the air, a flash of intensely-colored light is produced, while the combustion is so perfect that there is no perceptible ash. The barium salt gives a beautiful green light, the strontium-salt a crimson, the potassium-salt a violet, and the copper-salt a fine blue. The chlorates may be prepared sufficiently pure for these experiments by mixing warm solutions

of the chlorides of barium, strontium, or copper, with an equivalent quantity of a warm solution of chlorate of potassium. The clear liquid is to be poured off the precipitated chloride of potassium, and employed for the saturation of different portions of the gun-paper. The foregoing makes an admirable lecture-experiment, for illustrating the colors of the barium, strontium, and other flames.—*A. H. Church.*—*Chem. News, Dec.* 24, 1859.

Bitumenized Paper Tubing.—An experiment was recently made under the great clock tower, Westminister, for trying the strength, by hydraulic pressure, of a new description of tubing, composed of bitumenized paper, invented by M. Jaloureau, of Paris. M. Jaloureau is a contractor for paving Paris and other towns in France with bitumenous concrete. It happened in the course of his experiments that some paper which had been coated with bitumen was laid aside in a coiled form, and after some time it became very stiff and solid. Pursuing the idea which thus accidentally occurred to him, M. Jaloureau put several layers of bitumenized paper round a cylinder, and submitting them to internal pressure, he found that a tube a quarter of an inch in thickness was capable of resisting a pressure of 250 lbs. to the square inch. The municipal authorities of Paris tried these tubes for the conveyance of gas, and in the recent experiments made here a piece of tube was produced, which, though stated to have been under ground in Paris as a gas pipe for twelve months, had the appearance of being a new pipe. The tubes subjected to the pressure of the hydraulic pump bore a strain of 250 lbs. to the square inch without bursting, which is more than they would be ever called on to bear in ordinary use. One of the tubes, half an inch thick, and with a bore of two inches, was also tested by weight, and it only gave way to a pressure of 428 lbs. the bearings being three feet apart. It was stated that the tubes might be submitted to a temperature of 160 degrees of Fahrenheit without any deterioration of the material. The cost of the tubing is said to be less than half that of the ordinary iron piping. Messrs. Paul Joske and Alexander Young are the patentees of the invention in this country.—*Chem. News, Feb.* 11, 1860.

To make Paper Waterproof.—Dissolve 8 ounces of alum and 3¾ ounces of white soap in 4 pints of water; in another vessel dissolve 2 ounces of gum arabic and 4 ounces of glue in 4 pints of water. Mix the two solutions and make the mixture hot. Immerse the paper in the mixture, and then hang it up to dry or pass it between cylinders.

The alum, soap, glue and gum form a sort of artificial covering which protects the surface of the paper from the action of water, and to a certain extent from fire. This paper will be very useful for packages which may be exposed to the inclemency of the weather.—*Ibid. from Monitor de la Salud.*

Minutes of the Philadelphia College of Pharmacy.

Hall of the College of Pharmacy, 3d *mo.* 26, 1860.

The 39th Annual Meeting was held this evening. Present 22 members. CHARLES ELLIS, President, in the Chair.

The minutes of the last meeting were read and approved.

By the reading of the minutes of the Board of Trustees, the College was informed of the election of the following resident members: E. Raphael Perrott, Robert England, John E. Carter, Henry F. Geyer.

Roger Keys being recommended by the Board for resident membership, a ballot was ordered, T. Clarkson Griffith and S. S. Bunting acting as tellers. They reported his unanimous election.

The following list of graduates of the School of Pharmacy, is taken from the minutes of the Board. They received the degree of Graduate in Pharmacy at the late Commencement.

GRADUATING CLASS			SUBJECT OF THESIS.
Bell, Wm. D.	Hagerstown,	Maryland,	Manganese and its oxides.
Bolton, Joseph P.	Germantown,	Pennsylvania,	Geranium Maculatum.
Boyd, John W	Cleveland,	Ohio,	Cytisus Scoparius.
Bryan, John E.	Philadelphia,	Pennsylvania,	Diospyros Virginiana.
Claypoole, John	Wilmington,	Delaware,	Grana Paradisi.
Coleman, Francis A	Montreal,	Canada,	Gelatines.
Cowell, C. M	Currituck,	N. Carolina,	Capsicum Annuum.
Creecy, William Pryor	Vicksburg,	Mississippi	Liquidambar Styraciflua.
Franklin, Thomas H.	Philadelphia,	Pennsylvania,	Chimaphila Umbellata.
Fritsch, Herman	———	Prussia,	Carypha pumos.
Fronefield, Jr., Charles	Philadelphia	Pennsylvania,	Phellandrium aquaticum.
Gegan, James J.	Philadelphia	Pennsylvania,	Phytolacca decandra.
Haehnlen, Jr., Jacob F	San Francisco,	California,	Achillea Millefolium.
Keffer, Frederick A.	Philadelphia,	Pennsylvania,	Sabbatia Angularis.
Kemble, Henry B	Harrisburg,	Pennsylvania,	Stillingia Sylvatica.
Link, Ferdinand	Wurtemburg,	Germany,	Practical arrangement of a Drug and Prescription Store.
McIlvane, J. L	New Orleans,	Louisiana,	Vinum Ipecacuanhæ.
Macpherson, William	Philadelphia,	Pennsylvania,	Chelidonium Majus.
Mecray, Alexander M	Cape Island,	New Jersey,	Leptandra Virginica.
Newman, George A	Chambersburg,	Pennsylvania,	Caulophyllum thalictroides.
Parrish, William G	Burlington,	New Jersey,	Podophyllum peltatum.
Rulon, Edwin	Swedesboro,	New Jersey,	Cortex Caryæ Amaræ.
Sheridan, John I	Philadelphia,	Pennsylvania,	Foreign and Amer. Ipecacuanha.
Vogeloach, Herman A	Philadelphia,	Pennsylvania,	Regnum Vegetabile.
Wagner, Joseph	Philadelphia,	Pennsylvania,	Asclepias tuberosa.
Wells, James G	Norristown,	Pennsylvania,	Geranium Maculatum.
Wendel, John	Philadelphia,	Pennsylvania,	Sporula Lycopodii.
Wilson, James	York,	Pennsylvania,	Druggists and Drugs.
Winter, Jonas	Hagerstown,	Maryland,	Oleum Arachis hypogæa and Oleum Sinapis.

The following is an abstract of the Annual Report of the Library Committee to the Board of Trustees, taken from the minutes:

"The Committee on the Library have received the following donations of books since their last Annual Report, viz.:—From Dr. Robert Bridges, 4 vols.; W. C. Bridges per Dr. Bridges, 5; Samuel F. Troth, 3; A. J. Brazier, 46; H. Leuchsenring, 5; W. R. Warner, 4; Henry A. Tilden, 2; Merrihew & Thompson, 2; Samuel S. Garrigues, 3; Wm. J. Jenks, 1; Prof. A. D. Bache, 1; Thomas B. Florence, M. C., 1; Dr. George B. Wood, 1; Smithsonian Institution, 1; Joseph Scattergood, 6; Charles Bullock, 1; The New York State Library, in exchange for our Journal, 19; Margaret Croussilat per Dr. Bridges, 8; American Academy of Arts and Sciences, Boston, Mass., 4; Prof. William Procter, Jr., 20; total 137 vols.

Which, together with 247 vols. reported last year, makes 384 vols. added by donation to our library in two years.

Your committee have also the pleasure of reporting a cash donation of $20, for the use of the library, from our fellow-member, Peter Williamson.

Signed, SAMUEL F. TROTH,
WM. PROCTER, JR.,
EDWARD PARRISH,
SAMUEL N. JAMES,
SAMUEL S. GARRIGUES,
Committee on Library.

The Committee on the Sinking Fund made their Annual Report, of which the following is an abstract:

"Since the last annual meeting of the College, the Committee have paid off $450 balance of temporary loan for altering and repairing the College Hall, have borrowed $3,000 on mortgage, and by the aid of that sum, have paid off at par the irredeemable ground rent on our property, amounting to $3,750. This mortgage is all the debt of the College at at this time, instead of the heavy incumbrance by which the College was embarrassed when this Committee commenced its labors in 1844.

Signed, SAMUEL F. TROTH,
AMBROSE SMITH,
EDWARD PARRISH,
Committee."

The Committee on Latin Labels reported the condition of their concern the past year. They have issued no new pattern of labels, but are now printing a small edition of druggists' bronze labels from the old plates. The Report of the Committee, with the financial statement accompanying it, was accepted, and, on motion, the treasurer of the Committee was directed to pay into the hands of the Sinking Fund Committee a portion of the balance in hand.

The Publishing Committee reported as follows:

"The Journal has been regularly issued since the last Annual Meeting, and its pages have received the support of contributors from various sections in a manner quite encouraging to the Editor. The subscription list is well kept up, as shown by reference to the accompanying report of its financial condition. The Committee believe that the Journal is not as much known in Europe as it should be, chiefly from the fact that no effort has been made on our part to extend its circulation in that direction. The idea is at present under consideration to get it introduced to some extent by sending it gratuitously to scientific journals and individuals, so as to bring the numerous American contributions to Pharmaceutical science and skill to the knowledge of European Pharmaceutists. Some progress has been made in this work in Germany, but in England our Journal is hardly known.

Signed, CHAS. ELLIS,
WILLIAM PROCTER, JR.
EDWARD PARRISH,
A. B. TAYLOR,
On behalf of Committee."

The Committee on the preliminary revision of the Pharmacopœia, made a full report, accompanied by their minutes and by an imperfect copy of the proposed revised Pharmacopœia. The following is an abstract of the report:

The Committee met on the 17th of May, 1859, at the College Hall, organized, adopted rules and a programme of the proposed labor. Prof. Procter acted as Chairman, and James T. Shinn was appointed permanent Secretary. To make the number of the Committee 12, and thus to secure an equal division in the sub-committees, F. L. John and John M. Maisch were elected additional members.

The sub-committees were appointed as follows:

No. 1.	No. 2.	No. 3.
Prof. Procter, Ch'n.	Edw. Parrish, Ch'n.	A. Smith, Ch'n.
A. B. Taylor,	C. Bullock,	W. H. Pile, M. D.
T. S. Wiegand,	Wm. R. Warner,	S. S. Garrigues,
J. T. Shinn,	J. M. Maisch,	F. L. John.

In the division of the labor of revision, each committee was allotted about an equal number of subjects, and directed to report upon a certain proportion at each stated monthly meeting of the general committee. Meetings of the committee were held on the 21st and 28th of June, on the 5th, 12th and 19th of July, on the 16th and 23d of August, 18th of October, 15th and 29th of November, and 20th of December 1859, and on the 17th, 24th and 31st of January, and the 21st and 28th of February, 1860. The first five of these meetings were devoted to the consideration of the preliminary notices and the officinal *list*. After the full consideration and discussion of the list and the adoption of numerous proposed changes, it was referred to a special committee consisting of J. M. Maisch, F. L. John,

S. S. Garrigues, A. Smith and W. Procter, Jr., who were instructed to determine by experiments various points in regard to specific gravities, saturating power, tests &c., and to make a correct copy of the whole list.

The following are the new substances added to the primary and secondary lists and omitted from the same, viz:

To Primary list:
Acidum Lacticum,
Phosphoricum,
Alcohol Amylicum,
Alcohol Fortior,
Aloe Capensis,
Ammoniæ Sulphas,
Aurantii Flores,
Belladonnæ Radix,
Cadmium,
Caffea,
Capsicum Frutescens,
Chiretta,
Gelseminum,
Glycerina,
Gossypii Radix,
Hydrastis Canadensis
Ignatia Amara,
Leptandra,
Lobelia Semen,
Manganii Oxidum,
Mastiche,
Oleum Adipis,
Lycopodium,
Niccolum,
Ol. Aurantii Flor.
Ol. Aurantii Cort.
Oleum Camphoræ,
Oleum Thymi,
Plumbi Oxidum Rubrum,
Potassæ Bichromas,
Potassæ Permanganas,
Saccharum Lactis,
Santonica,
Sodæ Hypophosphis,
Spiritus Lauri.
Vanilla,

To Secondary list:
Achillea,
Angelica Arch.
Baptisia,
Berberis,
Caulophyllum,
Corydalis,
Cypripedium,
Curcubita,
Epigea,
Euonymus,
Eupatorium Purp.
Myrica,
Rumex Crispus,
Scutellaria.

Omitted from Primary list:
Cinchona as a general term for Barks,
Icththyocolla,
Sulphur Lotum,
Spongia.

To list from the Preparations:
Ammoniæ Carb.
Soda Bicarb.
Chloroformum,
Oleum Succini.

Omitted from the Secondary list:
Castanea,
Contrayerva,
Rumex Britan.
Rumex Obtusif.
Wintera.

As soon as the whole of the *preparations* had been reported upon, and these reports amended and adopted in committee, it was resolved to refer all of them to a special committee, to revise the Phraseology and Nomenclature, and to correct incidental errors, so as to prepare the whole for the copyist. This important duty was intrusted to A. B. Taylor, A. Smith and the Secretary.

The following is a list of the new preparations introduced, and of the formulæ expunged:

New Preparations:
Acetum Lobeliæ,
Acetum Sanguinariæ,
Acidum Chromicum,
Acidum Phosphoricum Dil.
Acidum Valerianicum,
Æther fortior,
Spiritus Chloroformi,
Aluminæ Sulphas,
Ammoniæ Phosphas,
Ammoniæ Valerianas,
Aqua Creasoti,
Aqua Aurantii Flores,
Atropia,
Atropiæ Sulphas,
Bismuthi Carbonas,
Cadmii Sulphas,
Calcis Phosphas Præcipitatus.
Ceratum Extracti Cantharidis,
Cinchoniæ Sulphas,
Emplastrum Arnicæ,
" Conii,
" Picis Canadensis,
" Plumbi fuscum,
Extractum Arnicæ,
" Digitalis,
" Colocynthidis,
" Senegæ,
" Valerianæ,
" Ignatiæ,
" Aconiti Radicis Fluidum.
" Buchu Fluidum.

Extractum Cimifugæ fluidum.
" Cinchonæ Fluidum.
" Conii Fluidum,
" Colchici Fluidum,
" Dulcamaræ,
" Ergotæ Fluidum,
" Gentianæ Fluidum.
" Geranii Fluidum,
" Glycyrrhizæ Fluidum,
" Hyoscyami Fluidum,
" Ipecacuanhæ Fluidum,
" Krameriæ Fluidum,
" Lobeliæ Fluidum,
" Pruni Virg. Fluidum,
" Podophylli Fluidum,
" Scillæ Fluidum,
" Serpentariæ Fluidum,
" Spigeliæ Fluidum,
" Taraxaci Fluidum,
" Uva Ursi Fluidium,
" Veratri Vir. Fluidum,
" Zingiberis Fluidum,
Liquor Chlorinii,
Liquor Ferri Tersulphatis,
Liquor Ferri Citratis,
Ferri et Aluminæ Sulphas,
" Ammoniæ Citras,
" Ammoniæ Tartras,
" Quiniæ Citras,
" Strychniæ Citras,
Ferri Sulphas Exsiccat.
Ferri Valerianas.
Oleum Tanaceti,
Oleum Erigeronis,
Pulvis Rhei Compositus,
Pulvis Sodæ Effervescentes,
Pulvis Aperientes Effervescentes,
Quiniæ Valerianas,
Resina Jalapæ,
Resina Podophylli,
Resina Scammonii,
Santoninum,
Liquor Sodæ,
Sodæ Chloras,
Sodæ Valerianas,
Spiritus Cinnamomi,
Spiritus Limonis,
Strychniæ Sulphas,
Syrupus Rosæ Gallicæ,
Syrupus Rubi Radicis,
Tinctura Arnicæ,
Tinctura Cannabis,
Tinct. Capsici et Myrrhæ,
" Cinchonæ Ferratæ,
" Ignatiæ,
" Opii Deodorata,
" Rhei Aromatica,
" Veratri Viridis,
Trochisci Cubebæ,
Trochisci Ferri Carbonatis,
Trochisci Zingiberis,
Unguentum Adipis,
Zinci Valerianas,

Preparations expunged:

Ferri Iodidum,
Pil. Ferri Iodidi,
Pil. Ferri Compos,
Pil. Galbani Comp.
Spongiæ Ustæ,
Tinct. Cinnam. Comp.
Tinct. Rhei et Gentianæ.

The great labor connected with this undertaking, from the very large number of experiments rendered necessary in the course of the revision, and the preparation of the numerous and elaborate reports of sub-committees and the final revision of these, has been gratuitously performed by the committee. It is now proposed to appropriate the funds at their disposal in procuring a complete and perfect copy of the whole for submission by the delegates from the College at the convention to meet in Washington in May next.

On motion the report was accepted and a bound copy of the Proceedings of the Committee directed to be placed in the Library of the College, as soon as the final revision is completed. The Committee is discharged, to take effect on the completion of the copy.

The Corresponding Secretary laid before the College a letter addressed by him to the Swiss Apothecaries' Association, in accordance with the instructions of the Board of Trustees, and in reply to the request of that Association for an interchange of dried specimens of plants between it and the American Pharmaceutical Association.

On motion of John M. Maisch, a Committee was appointed to collect an herbarium of indigenous plants, with reference to the exchange of specimens proposed, as follows:—J. M. Maisch, chairman, S. S. Garrigues, Wm. R. Warner, Thos. P. James and Professors Thomas, Bridges and Procter.

The Annual Election was now ordered, C. Shivers and S. S. Bunting acting as tellers. The College took a recess, after which the tellers reported the following election.

President,—CHARLES ELLIS.
1*st Vice President,*—Samuel F. Troth.
2*d Vice President,*—Dillwyn Parrish.
Treasurer,—Ambrose Smith.
Recording Secretary,—Edward Parrish.
Corresponding Secretary,—William Procter, Jr.

Trustees to fill the vacancies in the Board.

Dr. R. Bridges, J. C. Savery,
T. S. Weigand, S. N. James,
D. S. Jones, T. M. Perot,
S. S. Bunting, James T. Shinn.

Committee on Sinking Fund.

Samuel F. Troth, Ambrose Smith,
Edward Parrish.

Publication Committee.

Charles Ellis, William Procter, Jr.,
A. B. Taylor, Dr. R. Bridges,
Edward Parrish.

Delegates to the American Pharmaceutical Association.

Wm. J. Jenks, Charles Shivers,
Wm. H. Squire, Wm. R. Warner,
John M. Maisch.

The meeting then adjourned.

EDWARD PARRISH, *Secretary.*

Editorial Department.

Annual Commencement of the Philadelphia College of Pharmacy.—The annual commencement of this College was held on the 11th of March, in the Musical Fund Hall, in the presence of the largest audience that has heretofore graced these occasions. The official list of graduates, twenty-nine in number, will be found in the College Minutes, at page 277. The Degree was conferred by Charles Ellis, President of the College, and the Valedictory Address was delivered by Prof. Robert P. Thomas, who pointed out the relations between the pharmaceutist and the community, and the powerful influence that an enlightened public opinion may have in the improvement and elevation of pharmacy,

Annual Commencement of the Maryland College of Pharmacy.—We quote the following account of the proceedings on this occasion from the Maryland Journal, viz:

"The annual commencement of the College took place on Thursday evening, March 1st, at Carroll Hall, corner of Baltimore and Calvert streets, and was attended by a large and appreciative audience. The following young gentlemen received the Diploma of the College, viz.:

John F. Hancock,	Subject of Thesis,	*Cypripedium Parviflorum.*
John H. Bolton,	" "	*Coptis Trifolia.*
John B. H. Jefferson,	" "	*Hydrangea Arborescens.*
Samuel Fairbank,	" "	*Chimaphila Umbellata.*
Gustavus Dohme,	" "	*Polytrichum Juniperinum.*
John S. Conrad,	" "	*Prinos Verticillatus.*

The exercises were opened with prayer by Rev. C. M. Roberts, M. D., followed by the announcement of graduates by Prof. I. J. Grahame. The degree of 'Graduate in Pharmacy' was conferred on the candidates by the President of the College, Mr. Geo. Wansey Andrews, and the Valedictory Address was delivered by Prof. Francis Donaldson.

The graduating class was larger than at any former period, and at the final examination all acquitted themselves with great credit. It affords us pleasure to say that the School of Pharmacy is in a flourishing condition, and the prospects of the College of a most flattering character. The annual course of lectures will commence about the first of November, of which due notice will be given by circular."

Resignation of Prof. Grahame.—We have known for some time past the intention of Prof. Grahame, of the Maryland College of Pharmacy, to retire from pharmaceutical pursuits, and devote his attention to another profession. This step will lose to the pharmaceutical body a highly

useful co-laborer, and to the Maryland College one of its most valued teachers. We quote the following from the Maryland Journal for March:

"In common with members of the College and Pharmaceutists in general, we regret deeply the withdrawal of Prof. Grahame from the chair of Pharmacy in the College, and his retirement from the active duties of Pharmaceutist in this city, to engage in another occupation in a neighboring State. Every community feels the loss of a useful member of society, but in the present instance the School of Pharmacy and the Pharmaceutists of the city have to part with one who has won the hearts of all by his urbane disposition, and whose place in the School of Pharmacy it will not be easy to supply.

The best wishes of *all* go with Prof. Grahame to his new home, and although absent from our city, yet we hope the future pages of our Journal may be graced by the contributions of his pen."

THE DRUGGIST.—The last number of this Journal announces that the next will be issued under the auspices of C. Augustus Smith, of Cincinnati, as editor and proprietor. Being now solely under the management of Mr. Smith, he promises an able corps of colaborators, and we may look for many valuable contributions to the common stock of observations. So far, the "Druggist" has been creditably conducted, and the new editor has our best wishes for the successful issue of his new enterprise.

CINCINNATI COLLEGE OF PHARMACY.—At a meeting of this Institution, held on Tuesday, the 8th of March, the following gentlemen were elected officers of the College:

President, W. J. M. Gordon,
Recording Secretary, William Snyder,
Corresponding Secretary, E. S. Wayne,
Treasurer, George A. Shuesler.

THE CAVENDISH SOCIETY.—The Thirteenth Anniversary meeting of the Society was held at the rooms of the Chemical Society, Burlington House, London, on Thursday, March 1st, at 3 o'clock, P. M., Prof. Grahame presided.

From the Secretary's report, read on that occasion, we are informed that the 13th volume of Gmelin's Chemistry, after great delay, owing to the extensive additions that have been made to it, is nearly ready for distribution, and is likely to be the only book for 1859.

It seems now the determination of the Council to proceed with Gmelin's Chemistry as far as it can be obtained from the German editors, and complete the work, when, if deemed best, some reorganization of the Society can take place, or a new policy in regard to publications be adopted. The present income of the Society is not such as to admit of issuing two books annually. The Council have in view the publication of a general index for the Hand Book of Gmelin, which will, when the work is complete, be a valuable aid in consulting its pages. In answer to a question to that effect, the

Secretary announced that it would probably require three years more to complete Gmelin's Chemistry and the Index. The information is derived from the March number of the Chemical News.

Maisch's School of Practical Chemistry and Pharmacy.—The attention of our readers is called to the advertisement of Mr. John M. Maisch, in our advertising sheet. Mr. M., in devoting his time solely to scientific objects and teaching, is prepared to instruct young men in the details of chemical analysis and those of pharmaceutical manipulation. Pharmaceutists desirous of perfecting themselves in the practice of the more difficult processes of their art, and medical students who wish to acquaint themselves with the elements of pharmacy, in view of a country practice, will do well to avail themselves of the tuition of Mr. Maisch. Practical analyses, for commercial and medico-legal purposes, as well as of ores, minerals, etc., can be obtained by application to the laboratory, 800 Arch street, S. W. cor. Eighth st.

A Medico-Legal Treatise on Malpractice and Medical Evidence, comprising the elements of Medical Jurisprudence. By John J. Elwell, M. D., member of the Cleveland Bar. New York, John S. Voorhies, No. 20 Nassau Street; Cleveland, Alfred Elwell & Co., 1860.

It is not often that the author of a medico-legal treatise happens to be a member of both the professions to which its teachings are directed. The difficulties that constantly arise in the reception of medical testimony in our courts, owing to a mutual misunderstanding of the technicalities of the two professions, by which the lawyer is at fault in asking questions and the physician or chemist in answering them, so as to be most intelligible to the jury, make it very desirable that some well digested method of proceeding should be adopted, by which medical and chemical evidence can be couched in language easily understood by men of average common sense and judgment. For want of this method an ignorant witness may mistify a jury with absurd technicalities, or an unprincipled lawyer may impose on both judge and jury by marshalling forth an array of testimony, so nicely covered with scientific verbiage as to pass for weighty learning and stubborn facts. The chief novelty of the book of Dr. Elwell is the direction he gives it to surgical and medical malpractice, in both civil and criminal suits, including also the pharmaceutical bearing of the subject involving the responsibilities of druggists and apothecaries. This class of cases have not heretofore been digested into a regular treatise and were scattered through law books, rendering it a laborious work to consult them. The medical education of the author seems to have fitted him well for the task he has assumed. The increased frequency of civil suits for damages, for alleged malpractice in surgery, medicine and pharmacy, renders it a matter of great importance that judges and lawyers should

understand their cases, and be able to elicit and exhibit the testimony they involve, so that justice shall not suffer so monstrously as has frequently been the case by the inability of the legal advisers to satisfy the jury of the real nature of the wound or disease, and the true scope of the power of the surgeon and physician in effecting cures. Juries are too apt to lean in favor of the plaintiff—under a false idea of the powers of medicine, and an uncharitable view of the endless difficulties which beset the practitioner, *firstly* in diagnosis; *secondly* in judgment of treatment, and lastly, in the want of compliance with the directions of the physician by the attendents or the patients themselves. The frequency of cases requiring medical and chemical testimony arising out of suits for malpractice or criminal poisoning, suggests the importance of more special instruction and study in this branch of medical knowledge than is usually accorded either in medical schools or by medical men in their general reading.

Chapter xii., on the responsibilities of Druggists, although but brief, contains several suggestions relative to the legal responsibility of apothecaries and druggists which should be familiar to these classes.

"It is a well established principle of law, that a vender of provisions for domestic use is bound *to know* that they are sound and wholesome, at *his peril*. It is an equally elementary principle, that in contracts for the sale of provisions, the party, by implication, who sells them, undertakes to guarantee that they are sound and wholesome."

Blackstone also says: "Injuries effecting a man's health, or where, by any unwholesome practices of another, a man sustains any apparent damage in his vigor or constitution, as by selling him bad provisions or wine; by the exercise of a noisome trade, or by the neglect or unskilful management of a physician, surgeon, or apothecary, these are wrongs or injuries unaccompanied by force, for which there is a remedy in damages, by a special action on the case."

"These principles apply equally to druggists, physicians, and chemists, who compound medicines, as to those who sell bread meat and wines, etc. More care should be exercised by those who mix poisons for internal use, than is needed by those who sell fruit, food and the like. Bad wines, provisions, fruit and meat, can usually be at once detected by the senses; while the character of medical substances and compounds are only discovered by the careful analysis of an experienced chemist."

"A druggist, or one who prepares medicines, is held to a strict accountability in law, for any mistake he may make in compounding medicines. He must be exact in preparing those powerful medicines of which every small dose may produce fatal consequences. If an apprentice of an apothecary is guilty of negligence, he is guilty of manslaughter, if fatal consequences follow." When, however, instead of death, only damage to health results, then a civil action for damages against the employer for the act of his apprentice may be had.

"So, where a chemist makes a mistake when he is labelling medicines

for the general market, if the medicine in the course of trade passes through many hands, and is finally bought and used by one who is injured thereby, the original maker is liable to the person so injured, and not the druggist, who, relying upon the correctness of the label innocently sells the article for what it is not."

In regard to the regulation of the sale of poisons the author quotes, approvingly, the circular issued by the American Pharmaceutical Association, at its meeting in Philadelphia in 1857, in regard to that subject. But two adjudicated cases in which apothecaries or druggists are involved, are brought forward, but these are sufficient to prove the unpleasant legal consequences that may follow errors, where the parties injured are venal and unscrupulous.

The subject of poisons and poisoning, is treated of in seven chapters. The author does not enter into the subject in much detail, confining himself chiefly to some leading cases in which arsenic and strychnia were employed with evil intent. He quotes the chemistry of these two poisons from "Taylor on Poisons," which perhaps at this time is the best treatise on that subject. Some excellent hints are given in regard to the conduct of professional witnesses, attention to which will save much trouble to them, especially to chemists, in regard to the details of receiving material for analysis, and in making every link of the chain of evidence complete. The testimony of Dr. Doremus, in the Stephens case, at New York, is highly complimented, and the clashing of chemical evidence in the Palmer strychnia case comes in for a share of criticism.

The author also calls attention to the want of provision in our State laws, for the employment and payment of competent chemists in these cases; for although in important instances these valuable aids to justice are called in, yet there is often a want of certainty about the payment of charges which renders the service among able chemists an undesirable engagement. Until our courts provide more liberally for this disagreeable and valuable service, the cause of justice will be liable to suffer. Dr. Elwell's book must be looked upon as a valuable addition to medico-legal literature, and although more especially addressed to medical men and lawyers, we recommend its perusal to every apothecary who inclines to accomplish himself in his profession, and to enable himself to form a correct opinion in regard to the legal responsibilities to which the practice of pharmacy is liable.

Annual Address on the Events of the Year. Delivered by appointment, Feb 22d, 1860, *according to the By-Laws of the Philadelphia County Medical Society,* by Benjamin Horner Coates, at the legal cessation of the Presidency for the preceding year. Published by order of the Society. Collins, Printer, 1860, pp. 28.

The topics chosen by the learned author of this address are numerous; among them pharmacy and pharmaceutists have come in for a share. It

would require more space than we have to spare, to comment upon, as they deserve, the extraordinary expressions of this singular production. When the president of the largest medical body in our midst feels at liberty to speak thus of men, who, to say the least, have made laudable efforts to raise their status during the last three decades, because some of their number are guilty of improper practices, and his language is "published by order," one cannot but feel surprised. "Two wrongs don't make a right," nor is the return of evil for evil the wise course; yet were a similar latitude of remark indulged in by the apothecaries, within the strict lines of truth, they could easily demonstrate that learning is not always accompanied by infallibility, nor is excessive professional pride the mark of true Hippocratic wisdom. But as there are some points in the Address which call for a candid reply, and that due justice may be done to the author, it is but right that those points should be quoted, we propose to return to the subject in a future number, when the space at command will enable us to do it.

New Medical Journals.—Since our last issue we have received numbers of the following new Journals:—

The Cincinnati Medical and Surgical News. Edited by A. H. Baker, M. D. (Monthly.)

Louisville Medical Journal. Edited by Thomas W. Colescott, M. D. (Monthly.)

The Kansas City Medical and Surgical Review. Edited by Drs. Maughs & Case. (Monthly.)

Journal of Rational Medicine, Cincinnati. Edited by Dr. C. H. Cleveland. (Monthly.)

Memoir on the Salubrity of the Isle of Pines. By Dr. Don José de la Luz. Hernandez, Havana.

Obituary.—Dr. Charles Fricke, Professor of Materia Medica in the University of Maryland, and previously holding the same office in the Maryland College of Pharmacy, died, on the 25th of March, at his residence in Baltimore, of diptheria, after a short but painful illness, in the 37th year of his age. Dr. Frick was one of the most promising scientific men of his native city, Baltimore, and remarkable for his gentle and amiable manners, which rendered him beloved by all who knew him.

—— Professor James P. Espy, died at Cincinnati, on the 25th of January, in the 75th year of his age. Prof. Espy was a native of Pennsylvania, and taught school in Philadelphia for a series of years. He is chiefly known as a meteorologist, and for his theory of storms. For many years past he has held the position of meteorologist at the National Observatory, at Washington, a position he retained at the period of his demise.